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Opuscula Philolichenum

small works in the field of lichenology

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MISSION

Opuscula Philolichenum is intended to serve as a venue for the publication of small works in the field of lichenology (including lichenicolous fungi and non-lichenized fungi traditionally treated with lichens). The central goal of the journal is to provide timely publication, in a professional format, free of charge to authors and readers. While the journal focuses on topics relating to the lichen biota of North America this is by no means exclusive and manuscripts on other topics will be considered as the table of contents of the present issue clearly illustrates.

Authors wishing to submit a manuscript for publication in *Opuscula Philolichenum* should contact the editor prior to submission to confirm that the paper conforms to the mission of the journal (outlined above). Manuscript submissions should be left unformatted and authors should consult a recent issue of *Opuscula Philolichenum* for style. All submissions are subjected to review by at least two peer reviewers and, following acceptance are formatted by the editor.

NOTICE FROM THE EDITOR

When this journal began publication ten years ago it was among the first serials to take advantage of the internet when publishing new botanical nomenclatural acts. The journal was conceived as a primarily electronic one, available on-line free of charge (at <http://sweetgum.nybg.org/philolichenum/>), with a limited print run to satisfy the requirements for effective publication established under the *International Code for Botanical Nomenclature*. Since that time we have continued to publish the journal in this manner, printing one or two issues a year, with each issue consisting of between one and two hundred pages.

In 2004 we could not have foreseen the revolutionary changes that took place at the 18th International Botanical Congress in Melbourne. There the Nomenclature Section voted to allow electronic only publication of new nomenclatural acts beginning 1 January 2012. In response to this change *Opuscula Philolichenum* no longer produces hardcopy. Although a single printed copy will continue to be deposited in the library of The New York Botanical Garden.

Beginning with volume number 12 of *Opuscula Philolichenum*, manuscripts are published electronically on-line in PDF/A format immediately following the approval of the authors in the post-review proof stage. The PDF issued online is considered to be the final version (= version of record) and the date on which the PDF is posted is considered to be the date of effective publication. In order to aid future workers the date of effective publication for each manuscript is provided in the table of contents. When a new manuscript is published online a record is also simultaneously transmitted to the organizers of *Recent Literature on Lichens* for inclusion in that database.

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Sirenophila ovis-atra a new species of maritime Teloschistaceae from the Southern Hemisphere

ULRIK SØCHTING^{1*}, MAJBRIIT ZEUTHEN SØGAARD², LEOPOLDO G. SANCHO³, PATRIK FRÖDÉN⁴ & ULF ARUP⁵

ABSTRACT. – A new species, *Sirenophila ovis-atra* is described from maritime rocks of southern Patagonia, the Falkland Islands and Macquarie Island, where it grows in the upper part of the black ‘*Verrucaria*-zone’, most often on members of the genus *Hydropunctaria*. It is so far the only known species of *Sirenophila* in South America, a genus that is particularly prominent on the coasts of Australia.

KEYWORDS. – *Caloplaca*, Chile, parasitic lichen, maritime zonation, Tierra del Fuego.

INTRODUCTION

The lichens of Southern Patagonia have in recent years been studied intensively particularly as part of the Spanish projects ANTCOMPLEX, POLARPIONER and PLANTSUCCESS. The Chilean part of Tierra del Fuego with Navarino Island and the canals and fjords north and south of the Cordillera Darwin were targeted during several sea based expeditions in 2005, 2008, 2009 and 2015. During these expeditions it was possible to study the maritime zones inhabited by lichens, particularly those belonging to the family Teloschistaceae. Rocky shores along cool oceans worldwide are known to display a characteristic zonation of lichen communities (Brodo & Sloan 2005, Fletcher 1980, Söchting et al. 2004) consisting of a lower black *Hydropunctaria* (formerly *Verrucaria*) zone, which upwards in elevation and closer to the land merges into an orange zone dominated by species belonging to Teloschistaceae. In spite of the overall visual similarity between the sea shores of distant continents the species composition differs significantly. Historically all those species with the yellow or orange anthraquinone pigments were placed in the genera *Caloplaca* and *Xanthoria*. However in recent years the delineation of these genera, together with others in the Teloschistaceae, has changed radically as a result of molecular study (see e.g., Arup et al. 2013). While many of the newly circumscribed genera lack discrete morphological synapomorphies, they do display strong phylogeographic patterns (Arup et al. 2013). Most striking is the very high diversity of the genus *Sirenophila* in Australia and New Zealand which contrasts to the presence of a similarly diverse genus *Austroplaca* in South America and Antarctica, meanwhile both genera are absent from coastal rocks of the Northern Hemisphere.

An apparently undescribed species belonging to Teloschistaceae was found growing quite abundantly along the Beagle Chanel in Tierra del Fuego at the very low edge of the orange zone, actually parasitizing the *Hydropunctaria* of the adjacent lower zone. Its affiliation to current Teloschistaceae genera was only possible after subsequent molecular studies that showed it to belong in the genus *Sirenophila*, a genus not previously known from South America. Further studies supported the novelty of the species, which is here described as *S. ovis-atra*.

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Locality	Collection nr.	Herbarium	nrITS	nrLSU	mtSSU
Chile, Navarino I.	<i>Søchting 12295</i>	C	KU578078		
Chile, Navarino I.	<i>Søgaard 90</i>	C	KC179306	KC179250	KC179589
Chile, Navarino I.	<i>Søgaard 91</i>	C	KU578079		
Chile, Navarino I.	<i>Søgaard 106a</i>	C	KU578080		
Chile, Navarino I.	<i>Søchting 10176b</i>	C	KU578081		
Chile, Navarino I.	<i>Søchting 12341</i>	C	KU578082		
Chile, Punta Arenas	<i>Søchting 12386b</i>	C	KU578083		
Chile, Chaitén	<i>Frödén 1616</i>	LD	KU578084		

Table 1. GenBank accession numbers and associated voucher information for sequences of *Sirenophila ovis-atra*. Newly generated sequences from this study in bold.

MATERIALS AND METHODS

The study is primarily based on material collected by the authors in Tierra del Fuego in southern South America (C, LD), supplemented with collections from Hobart, Australia (HO). In addition the following herbaria have unsuccessfully been screened for possible matches: British Antarctic Survey (BAS), Canberra (CANB), Farlow Herbarium (FH), Michigan State University (MSC). Macroscopic descriptions are based on observations made with a Wild Heerbrugg, M5-53204 dissecting microscope with measurements made using a mounted Nikon DS-Fi1 camera combined with the software NIS-Elements. Sections were made using a Reichert-Jung Cryostat 2800 Frigocut E microtome and viewed using an Olympus BX60 microscope. All measurements were made on material mounted in water. Ascospores were measured outside the asci, with size given as an average with standard deviation, and extremes written in brackets. The thickness of ascospore septa was measured at the outer wall in accordance with Vondrák *et al.* (2013). The number of measurements is indicated in brackets. Paraphysis morphology and measurements were made after soaking for 24 hours in an aquatic solution of Ariel Color TM detergent to dissolve lichenin.

The secondary metabolite pattern was identified using HPLC and analysed separately for thallus and apothecia. The relative composition of the secondary compounds was calculated based on absorbance at 270 nm according to Søchting (1997).

ITS sequences of the newly collected specimens were produced according to the procedures described by Arup *et al.* (2013), who had already published sequences of nrITS, nrLSU and mtSSU under the name “sp. 20”. All sequences were submitted to GenBank with the accession numbers indicated in Table 1.

THE NEW SPECIES

Sirenophila ovis-atra Søchting, Søgaard & Sancho sp. nov.
Mycobank #815606.

FIGURE 1.

DIAGNOSIS. – Thallus granular squamulose, grey, parasitic on *Hydropunctaria* sp. on maritime rocks; apothecia yellow with prominent margin; asci with 8 hyaline, ellipsoid, polardiblastic ascospores, ca. 14 x 7 µm with ca. 6 µm thick septum.

TYPE: **CHILE. XII REGIÓN DE MAGELLANES Y ANTARTICA CHILENA:** Canal Beagle, Seno Holanda, 54.9420°S, 69.1545°W, alt. 2 m, N-exposed overhanging rock, 1 m from the sea, 27.i.2015. *U. Søchting 12295* (C!, holotype; LD!, isotype).

ETYMOLOGY. – *Sirenophila ovis-atra* is named ‘the black sheep’ due to the deviating appearance, growth at the extreme limit of terrestrial habitats, and remote occurrence compared to its attractively orange relatives in Australia and New Zealand.

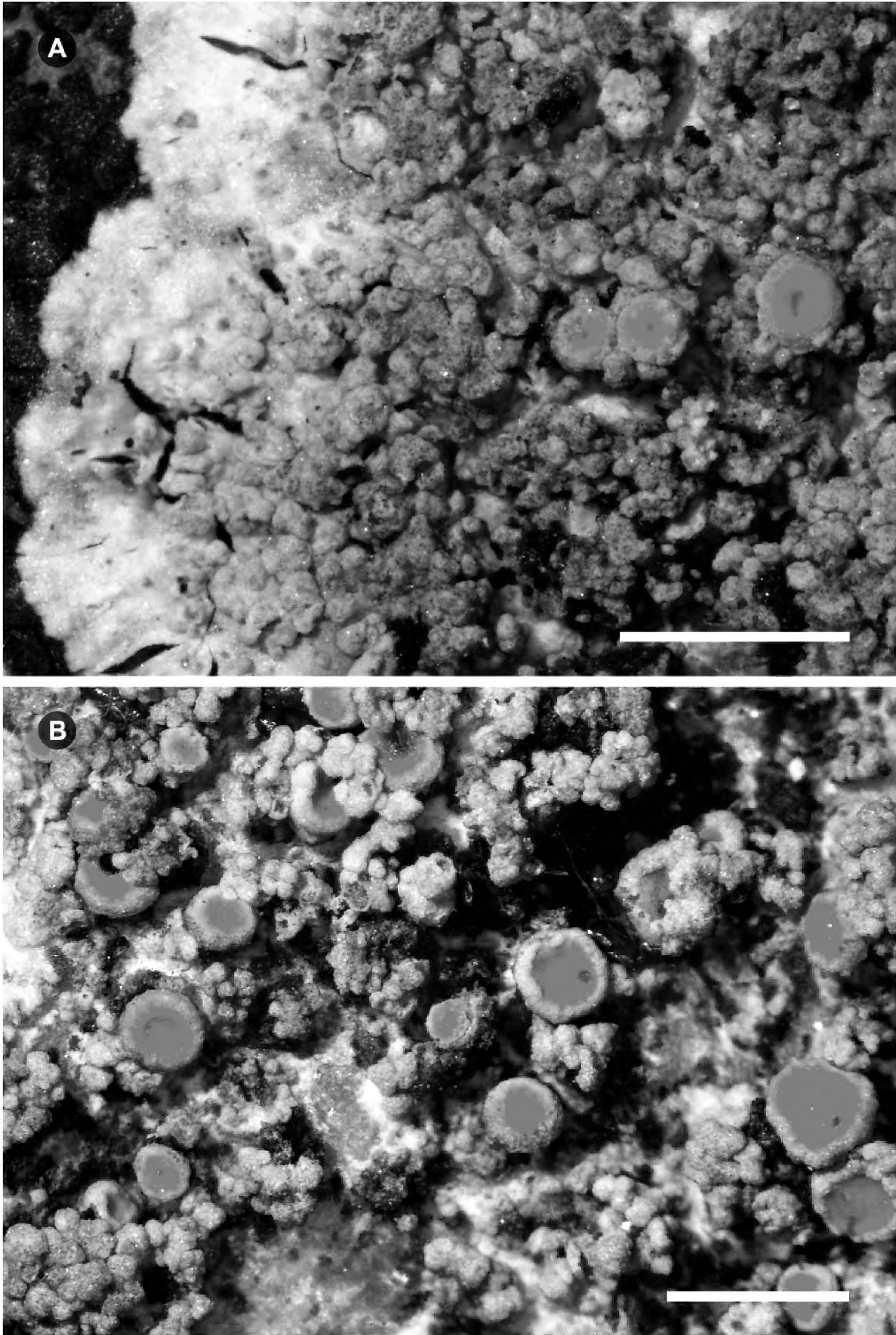


Figure 1, *Sirenophila ovis-atra* (both from the holotype). A, margin of young thallus on *Hydropunctaria* sp. B, central part of older thallus. Scale = 1.0 mm.

DESCRIPTION. – *Thallus* crustose, effuse, often with a grey appressed prothallus and with irregular, granular to slightly lobate, grey areoles often overgrowing *Hydropunctaria* sp. thalli; older thalli mostly fusing into a continuous, grey areolate crust with an occasional faint yellowish tinge (fig. 1).

Apothecia abundant, dispersed, zeorine, sessile, constricted at base, regular, up to 0.9 mm broad, initially strongly concave with prominent undifferentiated margin, later with a flat or slightly convex yellow-orange disc and a slightly prominent, 50–65 µm thick, concolorous proper exciple and a distinct, slightly crenulate, up to 60 µm thick thalline margin, concolorous with the thallus; *thalline margin* without or with an indistinct cortical tissue; *proper margin* hyaline, consisting of intricately interwoven hyphae that extend into the *c.* 50 µm high, hyaline *hypothecium*. *Hymenium* hyaline, 85–100 µm; *epihymenium* with medium coarse anthraquinone crystals on the surface; *paraphyses* 2–2.5 µm thick, branched, terminally only slightly swollen, up to 4 µm thick. *Asci* with 8 spores; *ascospores* ellipsoid, polardiblastic, (11.5)–13.8 ± 1.6–(17.3) × (6)–6.9 ± 0.5–8.5 µm [30], septum 5.8 ± 0.9 µm [30], ratio of septum/spore length *c.* 0.4

Pycnidia not observed.

CHEMISTRY. – The grey thallus is K-, C-, KC-, PD-, UV- and N- and contains no extractable secondary compounds. Orange pigmented parts of the thallus and the apothecia are K+ red. Parietin is the strongly dominant secondary compound in the apothecia corresponding to chemosyndrome A of Söchting (1997).

DISTRIBUTION AND ECOLOGY. – The new species is often parasitic on *Hydropunctaria* sp. on sheltered, maritime rocks at the transition between the black ‘*Hydropunctaria* zone’ and the orange ‘*Austroplaca* zone’, where it is often associated with *A. millegrana* (Müll. Arg.) Söchting, Frödén & Arup. It is probably common along the marine shores of Patagonia, but most likely largely overlooked due to its insignificant appearance, its concealed habitat and the lack of focused collecting in the region. It has been collected along the Chilean coast up to about 43° S, and is also recorded from the Falkland Islands and Macquarie Island (Australia). It may thus have a full circumantarctic distribution.

MOLECULAR RESULTS. – In addition to the sequences of nrITS, nrLSU and mrSSU that were published and deposited in Genbank by Arup et al. (2013) as “*Sirenophila* sp. 20”, seven new nrITS sequences of *S. ovis-atra* were produced for this study (see Table 1), five of which are 100% identical to “sp. 20” and two of which deviates from “sp. 20” in one and five positions out of 522, respectively.

In the phylogenetic analyses of Arup et al. (2013), *Sirenophila ovis-atra* (as “sp. 20”), was recovered in the genus *Sirenophila* in the subfamily *Teloschistoideae* of *Teloschistaceae*. Both in the three gene analysis and in the ITS analysis it was recovered as a sister species to *S. bermaguiana* (S.Y. Kondratyuk & Kärnefelt) Söchting, Arup & Frödén, which, like most other *Sirenophila* species, is known only from Australasia. The ITS sequence of *S. bermaguiana* available in GenBank (KC179299) deviates in 18 positions out of 522 from *S. ovis-atra*.

DISCUSSION. – Based on morphological or anatomical characters it is often impossible to discriminate many genera within *Teloschistaceae*, but molecular data already convincingly assigned the new species to *Sirenophila* in a prior study (Arup et al. 2013). This genus is very diverse in Australia and New Zealand, but has so far not been reported from the Northern Hemisphere, or from South America. *Sirenophila bermaguiana* from Australia is the closest relative based on the molecular results (see above) but the two species are morphologically very different. *Sirenophila bermaguiana* has an areolate, bright yellow to whitish thallus and very small, distinctly zeorine apothecia with orange discs (Kondratyuk et al. 2007 and Arup et al. 2013, fig. 52), whereas *S. ovis-atra* has larger, vivid yellow apothecia and a greyish thallus, and is restricted to sheltered maritime rocks mostly on *Hydropunctaria* sp. The ecology of the new species is analogous to two species of the mesic-supralittoral zone in the Northern Hemisphere, *Variospora thallincola* (Wedd.) Arup, Frödén & Söchting and *Flavoplaca microthallina* (Wedd.) Arup, Frödén & Söchting (Fletcher 1975). The almost total lack of orange pigmentation on the thallus is not an ecological modification due to low light intensities as *Austroplaca* species that grow with the new species display perfectly normal pigmentation. In Patagonia the maritime rocks above the *Hydropunctaria/ovis-atra* zone are occupied by a number of species belonging to *Austroplaca*, whereas similar habitats in the Australian region are abundantly occupied by the genus *Sirenophila*.

The ecology of *Sirenophila ovis-atra* is so extreme that it is unlikely to be found outside maritime habitats; however, it could occur under similar ecological conditions in other continents and thus be

described before. No species known from Australia comes close in morphology (Kondratyuk et al. 2012) and the one species with similar ecology and somewhat similar morphology from New Zealand, *Caloplaca papanui* D.J.Galloway has very thin septum, 1.5–2 µm (Galloway 2004). None of the publications of Carrol W. Dodge including his Antarctic Lichen Flora (Dodge 1973) include potential names for the new species, and our studies of lichen collections and literature pertinent to the Subantarctic Islands, Kerguelen, Crozet and Bouvetøya do not reveal relevant published species names.

Additional specimens examined. – **CHILE.** XII REGIÓN DE MAGALLANES Y DE LA ANTÁRTICA CHILENA: Province Antártica Chilena, Isla Navarino, 2 km E of Puerto Williams, maritime stone, in the upper part of the *Verrucaria* zone and the lower part of the *Caloplaca* zone, 0–2 m, 54.9297°S, 67.5725°W, 26.i.2008, on rock, *M.Z. Søgaard 90* (C), *M.Z. Søgaard 91* (C); E of Puerto Navarino, maritime cliff, 1–2 m, 54.9317°S, 68.3547°W, 28.i.2008, on rock, *M.Z. Søgaard 106a* (C); Caleta Honda, island in bay, 54.9153°S, 68.2259°W, maritime rock in *Verrucaria* zone, 1.ii.2015, on rock, *U. Søchting 12341* (C); 50 km SSW of Pta. Arenas, Fuerte Bulnes, 53.6321°S, 70.9130°W, alt. 3 m, on shaded, maritime rock, 8.ii.2015, *U. Søchting 12386b* (C). **X REGIÓN LOS LAGOS:** Chaitén, just outside central Chaitén, 42.9215°S 72.7190°W, 16.i.2001, on coastal rocks *P. Frödén 1616* (LD), *U. Arup L01145* (LD). **FALKLAND ISLANDS.** East Falkland, near Stanley, Murrell River, 51.65497°S, 57.92624°W, on shore of sheltered sea inlet, 2.ii.2015, on stones, *A. Orange 22656* (NMV-C.2015.004.66). **AUSTRALIA.** Macquarie Island, W side of The Isthmus, 4 m, 54.50°S, 158.95°E, 1995, on rock stack with *Verrucaria*, *R. Seppelt 19436* (HO).

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Pleospora xanthoriae sp. nov. (Pleosporaceae, Pleosporales), a new lichenicolous fungus on *Xanthoria parietina* from Ukraine, with a key to the known lichenicolous species of *Dacampia* and *Pleospora*

ALEXANDER YE. KHODOSOVTSSEV¹ & VALERIY V. DARMOSTUK²

ABSTRACT. – The new lichenicolous fungus *Pleospora xanthoriae* is described from *Xanthoria parietina* thalli found in southern Ukraine. A key to the lichenicolous species of *Dacampia* and *Pleospora* is also provided.

KEYWORDS. – Ascomycota, Dothideomycetes, lichen parasites.

INTRODUCTION

Pleospora Rabenh. ex Ces. & De Not. is a large genus of terrestrial parasitic or saprobic fungi characterized by fissitunicate asci, anastomosing paraphysoids, muriform brown ascospores and pseudothecia of three layers: (1) a thin inner layer of thin-walled, hyaline to light brown flattened cells; (2) a relatively wide central layer of thin-walled, hyaline to light brown angular cells; (3) an outer very thin layer of dark-brown amorphous cells, which gives the brown-black colour to the ascomata (Hyde et al. 2013). Only several recently described species of *Pleospora* are lichenicolous namely, *P. tretiachii* Hafellner (= *P. aquatica* Tretiach & Nimis, see Tretiach & Nimis 1999) and *P. bernandetiae* van den Boom (van den Boom 2015). *Pleospora collematum* Zúkal (Clauzade et al. 1989, Silanes et al. 2009) and *P. crozalsii* Vouaux (Clauzade et al. 1989, Roux et al. 2006) are poorly studied and rare species. Recently, *P. physciae* (Brackel) Hafellner & E. Zimm. (Brackel 2010a,b; Hafellner & Zimmerman 2012) was transferred to *Didymocyrtis* Vain. as *D. physciae* (Brackel) Hafellner (Hafellner 2015), although this was without support from molecular studies. Considering that *Pleospora* is a genus containing plant parasites, lichenicolous species of “*Pleospora* morphology” have previously sometimes been described in the lichenicolous genus *Dacampia* A. Massal. (e.g., Halıcı et al. 2009a,b; Halıcı & Hawksworth 2008, Brackel 2010a,b; Kocourcová & Knudsen 2010). Diagnostic characters for *Dacampia* s. str. are the large ascomata with the ostiolar region forming a distinct neck lined by periphysoids, the ascomata connected to distinct, brown vegetative hyphae, and an ascus apex forming a ‘nasse apicale’ (Crivelli 1983, Henssen 1995, Hafellner & Zimmerman 2012). The type species of the genus, *D. hookeri* (Borrer) A. Massal., was placed in Pleosporales (Ertz et al. 2015), but the placement of other *Dacampia* species has not been revised. The aim of this study is to describe a new lichenicolous species dwelling on *Xanthoria parietina* (L.) Th. Fr. that we consider to represent a member of *Pleospora* s. lat. on the basis of its morphology.

MATERIALS AND METHODS

The material was examined using standard microscope techniques. Sections for anatomical examination were cut by hand and observed in water and 10% KOH. Amyloid reactions were tested in 1%

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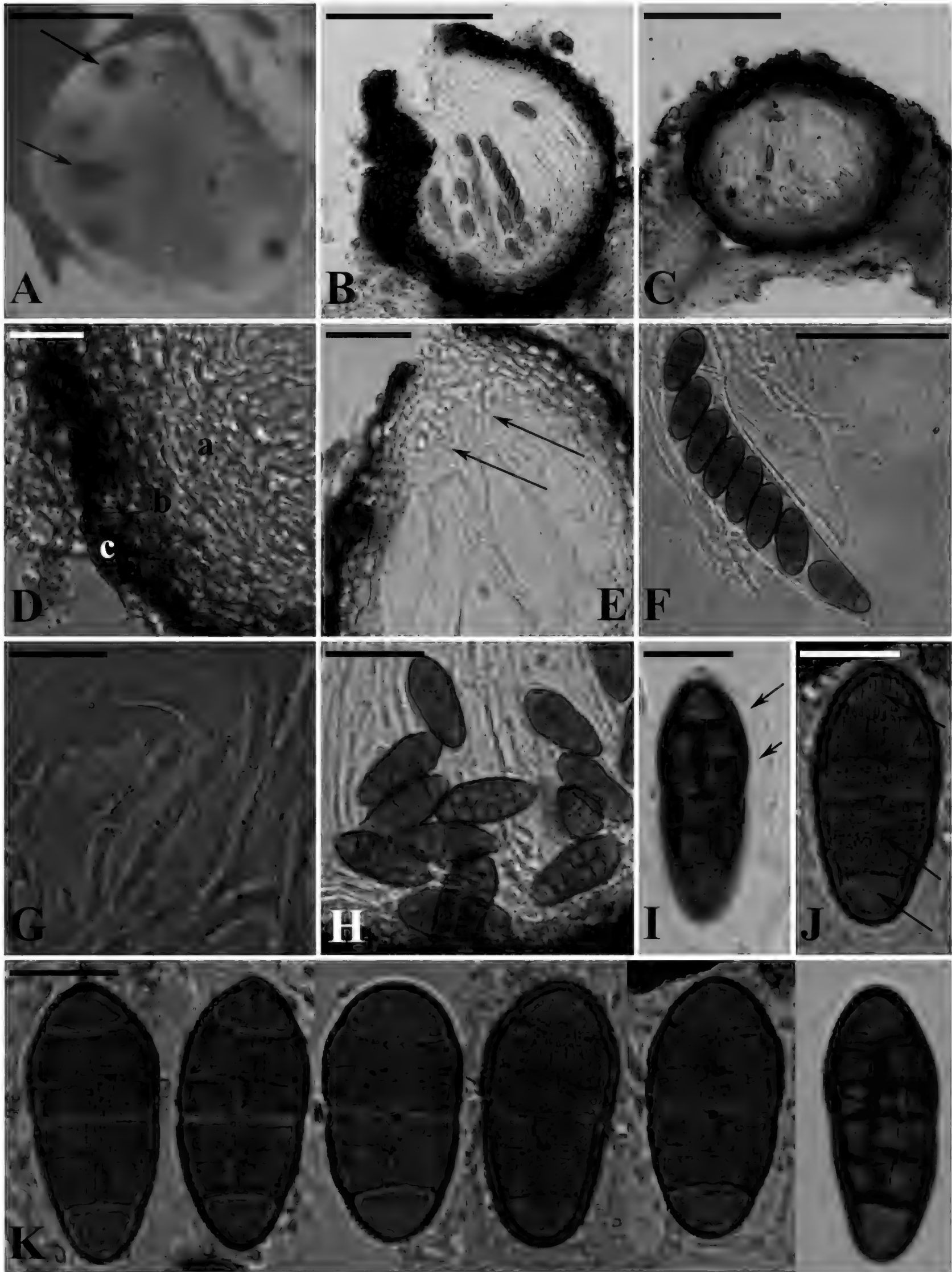


Figure 1, morphology of *Pleospora xanthoriae* (all from the holotype). A, ascomata (arrows) in the apothecia of *Xanthoria parietina*. B and C, sections of ascomata in water. D, wall of ascoma in water (a = inner, b = central, c = outer layers). E, section of the ostiolar region in young ascoma with paraphysoids (arrows). F, ascus in water. G, paraphysoids in water. H, ascospores in water. I, hyaline halo (arrows) of ascospores in iodine. J, minute sharply pointed spines (arrows) of ascospore in water. K, ascospores in water (left five) and iodine (rightmost). Scales = 1.0 mm in A; 100 μ m in B & C; 50 μ m in E & F; 25 μ m in H; 10 μ m in D, G & I-K.

Lugol's iodine with (K/I) or without (I) pre-treatment with 10% KOH. Measurements were made in water with an accuracy 0.25 µm for ascospores, asci, paraphysoids and hyphal cells; 5.0 µm for ascomatal walls; 10.0 µm for ascomata. Measurements are given as (min.–) $\bar{x} \pm \text{SD}$ (–max.), where \bar{x} is an average and SD a standard deviation. Photographs were taken with a “Levenhuk” camera on a stereomicroscope MBS-2 and microscope MICROMED-2. The specimens examined are deposited in the lichenological herbarium of Kherson State University (KHER).

THE NEW SPECIES

Pleospora xanthoriae Khodos. & Darmostuk, sp. nov.

MYCOBANK #816157.

FIGURE 1.

DIAGNOSIS. – Lichenicolous fungus on *Xanthoria parietina*. Ascomata perithecioid, black, subglobose, (90–)150 ± 40(–220) µm. Ascomatal wall (15–)25 ± 5(–35) µm thick, brown. Hamathecium of cellular paraphysoids, septate, simple or branched and anastomosed, (1.3–)2.3 ± 0.5(–3.3) µm, I–. Asci clavate, fissitunicate, 8-spored, (90–)110 ± 15(–130) × (18–)22 ± 3(–25) µm. Ascospores arranged irregularly biserial to uniserial in the ascus, ellipsoid, golden brown, muriform, with 5 transverse septa and 0–2 longitudinal septa per transverse level, slightly constricted at median septa, (20.5–)24.5 ± 1.5(–27) × (9–)11 ± 1.3(–13) µm, covered by minute sharply pointed spines.

TYPE: **UKRAINE. KHERSON REGION:** Golopristsans'ky District, Black Sea Biosphere Reserve, Solonoozerna lot, N of Lake Gryazne, 46°27'33"N, 31°57'38"E, sand dunes, 29.ii.2008, on thallus and apothecia of *Xanthoria parietina* growing on plant debris, *O. Umanets 9319* (KHER!, holotype).

DESCRIPTION. – Vegetative hyphae scattered, medium brown, observed around ostiolar part, immersed in host thallus, c. 2–3 µm thick. Ascomata perithecioid, arising singly, with visible ostiole, without distinct neck, immersed at first to semi-immersed at maturity, black, subglobose, (90–)150 ± 40(–220) µm ($n=15$). Ascomatal wall composed of angular pseudoparenchymatous cells (textura angularis) in cross section, (15–)25 ± 5(–35) µm ($n=15$) thick, which formed three layers, a thin inner layer of thin-walled, hyaline tangentially elongated cells, (7.75–)9 ± 0.75(–10.5) × (2.0–)2.75 ± 0.5(–3.5) µm ($n=15$), a wide central layer of thin-walled, hyaline to light brown radially compressed cells, (5.5–)6 ± 0.5(–7.0) × (3.25–)3.75 ± 0.5 (–4.25) µm ($n=20$) and an outer of very thin amorphous cells, (5.25–)6.5 ± 0.5(–7.25) µm ($n=10$) wide with dark brown pigment deposited in external cellular walls. Hamathecium composed of abundant, septate, simple or branched and anastomosed cellular paraphysoids, (1.3–)2.3 ± 0.5(–3.3) µm ($n=20$), I–; ascomatal wall around ostiole in young ascomata of hyaline angular cells, c. 3–5 µm wide, true neck periphysoids absent. Asci clavate, fissitunicate, 8-spored, (90–)110 ± 15(–130) × (18–)22 ± 3(–25) µm ($n=10$), wall I–, plasma I+ orange. Ascospores irregularly biserial to uniserial in the ascus, ellipsoid, rounded to obtusely pointed at the apices, pale brown to golden brown (but old spores dark brown), muriform, with 5 transverse septa and 0–2 longitudinal septa per transverse level, 10–12 cells visible in optical field, slightly constricted at the median transverse septum, (20.5–)24.5 ± 1.5(–27) × (9–)11 ± 1.5(–13) µm, length/width (1.9–)2.3 ± 0.3(–2.9) ($n=60$); wall 1.0–1.5 µm thick with minute sharply pointed spines; hyaline halo 1.5–3.0 µm thick, finely visible in I, disappearing in overmature ascospores. Conidiomata not observed.

ECOLOGY AND DISTRIBUTION. – The new species is known only from southern Ukraine where it was found in on thalli and apothecia of *Xanthoria parietina* growing on the bark of *Populus tremula* in a small forest and on plant debris among sand dunes. It does not cause any bleaching of the thallus and apothecia.

OBSERVATIONS. – *Pleospora xanthoriae* is morphologically similar to *P. bernandetiae* which grows on *Protoparmeliopsis muralis* (Schreb.) M. Choisy, but that species has broadly ellipsoid ascospores (15–17 µm wide vs. 9–13 µm in *P. xanthoriae*), larger ascomata (400 µm wide vs. 90–220 µm in *P. xanthoriae*), and longer asci (150–200 µm long vs. 90–130 µm in *P. xanthoriae*) (van den Boom 2015). *Pleospora tretiachii* which is found on *Aspicilia supertegens* Arn. has larger ascospores (32–88 × 17–25 µm vs. 20.5–27 × 9–13 µm in *P. xanthoriae*), and ascomata larger (260–420 µm wide vs. 90–220 µm in *P.*

xanthoriae) (Tretiach & Nimis 1999). *P. collematum* and *P. crozalsii* have narrower ascospores measuring $13 \times 4 \mu\text{m}$ and $16\text{--}21 \times 6\text{--}7 \mu\text{m}$ respectively, and grow on different hosts (see key below; Clauzade et al. 1989). Morphologically, *P. xanthoriae* is similar to some species of *Dacampia* and *Didymocyrtis*. *Dacampia lecaniae* Kocourk. & K. Knudsen described from *Lecania fuscella* (Schaer.) A. Massal. has smooth-walled ascospores (vs. ascospore walls with minute sharply pointed spines in *P. xanthoriae*) with 7 transverse septa (vs. 9–11 septa in *P. xanthoriae*) (Kocourcová & Knudsen 2010). There are two *Dacampia* species that are lichenicolous on Teloschistaceae and thus might be confused with the new taxon. *Dacampia xanthomendozae* Etayo & Halıcı occurs on species of the genus *Xanthomendoza* S.Y. Kondr. & Kärnefelt but has longer ascospores ($26.5\text{--}35.5 \mu\text{m}$ long vs. $20.5\text{--}27 \mu\text{m}$ in *P. xanthoriae*) with 7 transverse septa (vs. 9–11 transverse septa in *P. xanthoriae*) (Halıcı et al. 2009b). *Dacampia caloplacicola* Halıcı, Candan & Etayo grows on *Caloplaca crenularia* (With.) J.R. Laundon and has narrower ascospores ($6\text{--}8 \mu\text{m}$ wide vs. $9\text{--}13 \mu\text{m}$ in *P. xanthoriae*), with 3 transverse septa (vs. 9–11 transverse septa in *P. xanthoriae*), and the ascospores are strongly constricted at the median septum (vs. slightly constricted at the median transverse septum in *P. xanthoriae*) (Halıcı et al. 2009b). *Pleospora xanthoriae* is morphologically similar to *Didymocyrtis physciae* which grows on *Physcia* species, but differs from the latter in its larger ascospores ($20.5\text{--}27 \times 9\text{--}13 \mu\text{m}$ vs. $14.5\text{--}16.5 \times 6\text{--}7 \mu\text{m}$ in *D. physciae*) and different host (Brackel 2010a, Hafellner & Zimmerman 2012, Hafellner 2015).

Additional specimen examined. – **UKRAINE. KHERSON REGION:** Goloprystans`ky District, Chalbas`ka arena, Promin` village, Shelemens`ki lakes, $46^{\circ}20'15''\text{N}$, $32^{\circ}49'07''\text{E}$, small *Populus* forest, 5.xii.2015, on *Xanthoria parietina* growing on bark of *Populus tremula*, A. Khodosovtsev 9330 (KHER!).

KEY TO KNOWN LICHENICOLOUS *DACAMPIA* AND *PLEOSPORA* SPECIES (INCL. *DIDYMOCYRTIS PHYSCIAE*)

1. Ascospores $>30 \mu\text{m}$ in length 2
 2. Asci 8-spored; lichenized; associated with *Solorina* spp. (see Henssen 1995)..... ***D. hookeri***
 2. Asci 2–6-spored; non lichenized; non associated with *Solorina* spp 3
 3. Ascospores with conspicuous hyaline halo 4
 4. Ascospores $(32\text{--})41\text{--}55(\text{--}88) \times (17\text{--})19\text{--}21(\text{--}25) \mu\text{m}$; asci 4–6-spored; upper part of ascomatal cells K–; on aquatic *Aspicilia supertegens* (see Tretiach & Nimis 1999) ***P. tretiachii***
 4. Ascospores $(22\text{--})26.5\text{--}38.5(\text{--}40.0) \times 11.5\text{--}15(\text{--}17) \mu\text{m}$; asci (2–)4-spored; upper part of ascomatal walls K+ purple; on *Circinaria fruticulosa* (see Halıcı et al. 2009a) ***D. rubra***
 3. Ascospores without conspicuous hyaline halo 5
 5. Asci (4–)6-spored; ascospores $(26.5\text{--})28\text{--}32(\text{--}35.5) \times (10.5\text{--})10.9\text{--}13.1(\text{--}13.5) \mu\text{m}$; on *Xanthomendoza* spp. (see Halıcı et al. 2009b) ***D. xanthomendozae***
 5. Asci 2–4-spored; ascospores $(30\text{--})34\text{--}39 \times (10\text{--})14.5\text{--}16 \mu\text{m}$; on *Rhizocarpon obscuratum* (see Halıcı & Hawksworth 2008)..... ***D. rhizocarpicola***
1. Ascospores $< 30 \mu\text{m}$ in length 6
 6. Ascospores $> 9 \mu\text{m}$ in width..... 7
 7. Ascospores with up to 5 transverse septa 8
 8. Ascomata $150\text{--}250 \mu\text{m}$ in width 9
 9. Ascospores with 3–4 transverse septa, without hyaline halo, $(23\text{--})24.5\text{--}27 \times 11\text{--}13 \mu\text{m}$; forming necrotic spots; on *Peltigera* spp. (see Hawksworth 1986)..... ***D. rufescentis***
 9. Ascospores with 5 transverse septa, with hyaline halo, $(20.5\text{--})23.8\text{--}25.8(\text{--}27.0) \times (9.0)9.5\text{--}12(\text{--}13.0) \mu\text{m}$; not forming necrotic spots; on *Xanthoria parietina* ***P. xanthoriae***
 8. Ascomata $250\text{--}600 \mu\text{m}$ in width 10
 10. Ascospores $22\text{--}32 \times 15\text{--}17 \mu\text{m}$; ascomata up to $400 \mu\text{m}$ in width; on *Protoparmeliopsis muralis* (see van den Boom 2015)..... ***P. bernandetiae***
 10. Ascospores $18\text{--}25 \times 8\text{--}10 \mu\text{m}$; ascomata $250\text{--}450(\text{--}600) \mu\text{m}$ in width; on *Solorina saccata* (see Bricaud & Roux 1990) ***D. engeliana***
 7. Ascospores with up to 7 transverse septa 11
 11. Asci 2–4-spored; ascospores without hyaline halo, $21\text{--}26(\text{--}31.5) \times (7.0\text{--})9.0\text{--}12.5(\text{--}14.5) \mu\text{m}$; on *Protoparmeliopsis muralis* (see Halıcı & Hawksworth 2008)..... ***D. muralicola***
 11. Asci 8-spored; ascospores with hyaline halo 12

12. Asci 70–100 × 22–24 µm; ascospores (23–)25–29(–31.5) × 11–13 µm; on <i>Thamnolia vermicularis</i> (see Zhurbenko 2012)	<i>D. thamnoliicola</i> ad int.
12. Asci 110–140 × 20–30 µm; ascospores (21–)22.8–26.5(–28) × (8–)9.5–12 µm; on <i>Lecania fuscella</i> (see Kocourková & Knudsen 2010).....	<i>D. lecaniae</i>
6. Ascospores < 9 µm in width.....	13
13. Ascomata 150–200 µm in width	14
14. Ascospores 4 µm in width; on <i>Lempholemma compactum</i> (see Clauzade et al. 1989)	<i>P. collematum</i>
14. Ascospores > 4 µm in width; not on <i>Lempholemma compactum</i>	15
15. Ascospores 16–26 µm in length.....	16
16. Ascospores 8–9 µm in width.....	17
17. Ascomata 180–210 µm in width; ascospores usually with 5–6 transverse septa, (19–)21.5–26 × 8–9 µm; on <i>Peltigera rufescens</i> (see Bennett-Earland et al. 2006).....	<i>D. peltigericola</i>
17. Ascomata 110–160 µm in width; ascospores usually with 5–7 transverse septa, (19.5–)21.2–24.9(–26) × (6.5–)6.8–8.3(–9) µm; on <i>Lecania cyrtella</i> (see Brackel 2010a).....	<i>D. cyrtellae</i>
16. Ascospores 5–7 µm in width.....	18
18. Ascospores 16–21 × 6–7 µm; on <i>Sticta sylvatica</i> (see Clauzade et al. 1989) ...	<i>P. crozalsii</i>
18. Ascospores 21–25 × 5–6.5 µm; on <i>Leptogium burgessii</i> and <i>Pannaria rubiginosa</i> (see Halıcı & Hawksworth 2008)	<i>D. leptogiicola</i>
15. Ascospore 9–17 µm length	19
19. Ascospores (9.5–)10.5–12(–12.5) × (4.5–)5.5–6.5 µm, without halo; on <i>Cladonia foliacea</i> (see Halıcı et al. 2008)	<i>D. cladoniicola</i>
19. Ascospores 14.5–16.5 × 6–7 µm, with hyaline halo; on <i>Physcia</i> spp. (see Hafellner 2015).....	<i>Didymocyrtis physciae</i>
13. Ascomata 250–600 in width.....	20
20. Ascospores (17–)18.5–21.3(–23) × (6–)6.5–7.9(–8) µm, strongly constricted at median transverse septum; on <i>Caloplaca crenularia</i> (see Halıcı et al. 2009b)	<i>D. caloplacicola</i>
20. Ascospores 18–25 × 8–10 µm, slightly constricted at median transverse septum; on <i>Solorina saccata</i> (see Bricaud & Roux 1990).....	<i>D. engeliana</i>

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The cyanomorph of *Ricasolia virens* comb. nov. (Lobariaceae, lichenized Ascomycetes)

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ABSTRACT. – The cyanomorph and photosymbiodemes are here reported for the first time for *Ricasolia virens* (With.) H.H. Blom & Tønsberg comb. nov. (\equiv *Lobaria virens* (With.) J.R. Laundon). The cyanomorph of *R. virens* is dendriscocauloid. The observed early developmental stages involve (1) a free-living cyanomorph and (2) a photosymbiodeme composed of the cyanomorph supporting small, foliose, chloromorphic lobes. Whereas the chloromorph continues to grow, the cyanomorph decays and disappears leading to the final stage (3), the free-living chloromorph. Secondary cyanomorphs emerging from the chloromorph are not known.

KEYWORDS. – Peltigerales, cephalodia, ascospore-to-ascospore life cycle.

INTRODUCTION

Most species of lichen-forming fungi associate with a photobiont belonging to either the green algae or cyanobacteria (e.g., Brodo et al. 2001, Henssen & Jahns 1973, Nash 2008, Schwendener 1869). Within the family Lobariaceae, however, many species associate with both photobionts (e.g., Högnabba et al. 2009, James & Henssen 1976). Such ability to establish a physiological exchange with two types of photobionts may be expressed within a single thallus, in distinct thalli or portions thereof, or in distinct developmental stages. In tripartite lichens, three partners engage in the symbiotic association, and both photobionts are present, typically with the green algae composing the main partner, and the cyanobacteria encapsulated within specialized structures called cephalodia. Some fungal species may form, in addition to the tripartite lichen, a thallus comprising solely the cyanobacterium as photosynthetic partner (Högnabba et al. 2009, Honegger 2008, James & Henssen 1976), and this thallus may subsequently incorporate green algae and then bear green lobes (Tønsberg & Goward 2001). Alternative associations by a single fungal species wherein either one of the two photobionts is the primary autotroph are called photomorphs or morphotypes (i.e., the cyanomorph or the chloromorph). Photomorphs may be physically attached (e.g., in *Ricasolia amplissima* (Scop.) De Not.), forming a composite thallus that is referred to as a photosymbiodeme, or exhibit diverging ecological preferences (e.g., *Sticta filix* (Sw.) Nyl., James & Henssen 1976) and in some case distinct geographic distributions (e.g., in *Sticta canariensis* (Bory) Bory ex Delise, see Brodo 1994). Photomorphs may have the same growth form (e.g., in *Nephroma arcticum* (L.) Torss., where they are both foliose; see Tønsberg & Holtan-Hartwig 1983), or distinct growth forms, with the fungus forming a foliose tripartite lichen and a fruticose cyanomorph (James & Henssen 1976).

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Species with fruticose, dendriscocauloid, cyanomorphs forming photosymbiodemes occur exclusively in the Lobariaceae (Högnabba et al. 2009, James & Henssen 1976, Magain et al. 2012, Moncada et al. 2013). Photosymbiodemes are particularly frequent and conspicuous in *Ricasolia amplissima* (James & Henssen 1976, Krog et al. 1994, Rose & Purvis 2009, Stenroos et al. 2003, Tønsberg & Goward 2001, Wirth et al. 2013). *Lobaria virens* (With.) J.R. Laundon also forms foliose cephalodiate chlorolichens and may be closely related to *R. amplissima* (Högnabba et al. 2009). The two species are similar but *L. virens* is not known to develop cyanomorphs and photosymbiodemes (e.g., Krog et al. 1994, Rose & Purvis 2009, Wirth et al. 2013). Here we report and characterize such associations for the first time, based on specimens from Norway, and discuss their potential significance in the development of the free-living chloromorph of the species. Furthermore, since *L. virens* was resolved within the genus *Ricasolia* in recently published phylogenetic studies (Högnabba et al. 2009, Moncada et al. 2013), we extend our discussion on the development of the lichen thallus to the genus *Ricasolia*.

MATERIALS AND METHODS

FIELDWORK. – The material of *Lobaria virens* that provided the basis for this study was primarily collected by HB, JHH, LL and TT in various parts of Western and Central Norway. All specimens are deposited in the herbarium of the University of Bergen (BG). Unless otherwise stated, the datum for localities is WGS84. The recorded altitudes (above sea-level) for the cited specimens were obtained from topographic maps with contour intervals of 20 meters.

HERBARIUM STUDIES. – All specimens of *Lobaria virens* at BG were studied, and critically examined for the presence of cyanomorphs. Macroscopic descriptions of the cyanomorphs were based on composite thalli (i.e., thalli composed of a cyanomorph with an attached chloromorph) when possible. The extremely fragile and hence easily damaged cyanomorphs had to be subjected to destructive sampling for microscopic examination. To diminish or avoid damage to the composite thalli, samples were taken preferentially from free-living cyanomorphs adjacent or close to a composite thallus on the same small piece of bark. The description of the chloromorph was based on the recent collections and about 170 specimens held in BG. The cephalodia were studied on fresh collections of the chloromorphs. North American specimens identified as *Sticta herbacea* (Huds.) Ach. and filed under *L. virens* were obtained on loan from F.

CHEMISTRY. – Thin-layer chromatography (TLC) was carried out on cyanomorphs and chloromorphs according to Culberson & Kristinsson (1970) and later modifications. All three solvents (A, B' and C) were used and glass plates were used in solvent C to allow for the detection of fatty acids.

MOLECULAR METHODS. – To preliminarily test whether the cyanomorph and chloromorph were formed by the same lichen-forming ascomycete (i.e., *L. virens*), we compared the ITS sequences of seven mycobionts from separate photomorphs as well as of photosymbiodemes (see Table 1 in the Appendix). The DNA extraction, amplification, and sequencing followed Lindblom & Ekman (2005) and Lendemer & Goffinet (2015). Sequences were aligned using ClustalW in BioEdit ver. 7.2.3 (Hall 1999), and manually adjusted. To reflect the variation of ITS sequences within *Ricasolia* and the segregation of species, and hence the power of ITS in discriminating among species, a Maximum Likelihood (ML) analysis was conducted with Garli v. 2.0 (Zwickl 2006) and branch support estimated from 200 bootstrap pseudoreplicates. The sequences were partitioned into ITS1, 5.8S and ITS2 and substitution models estimated and selected using PartitionFinder (Lanfear et al. 2012) based on the AIC, with HKY+G applied to ITS 1 and ITS2 and K80+I to the 5.8S partition. No characters were excluded. The matrix of ITS sequences representing species of *Ricasolia*, including *R. virens*, and of the outgroup *Lobaria scrobiculata* (Scop.) DC., was deposited in TreeBase as study #19339.

RESULTS AND DISCUSSION

Phylogenetic inferences from variation in the mitochondrial SSU and the nuclear LSU have previously robustly resolved *Lobaria virens* as a member of *Ricasolia* (Högnabba et al. 2009, Moncada et al. 2013), yet the species has not been formally transferred to this genus. Hence we propose the new combination below. The species is endemic to Western Europe and Macaronesia and differs from the sym-

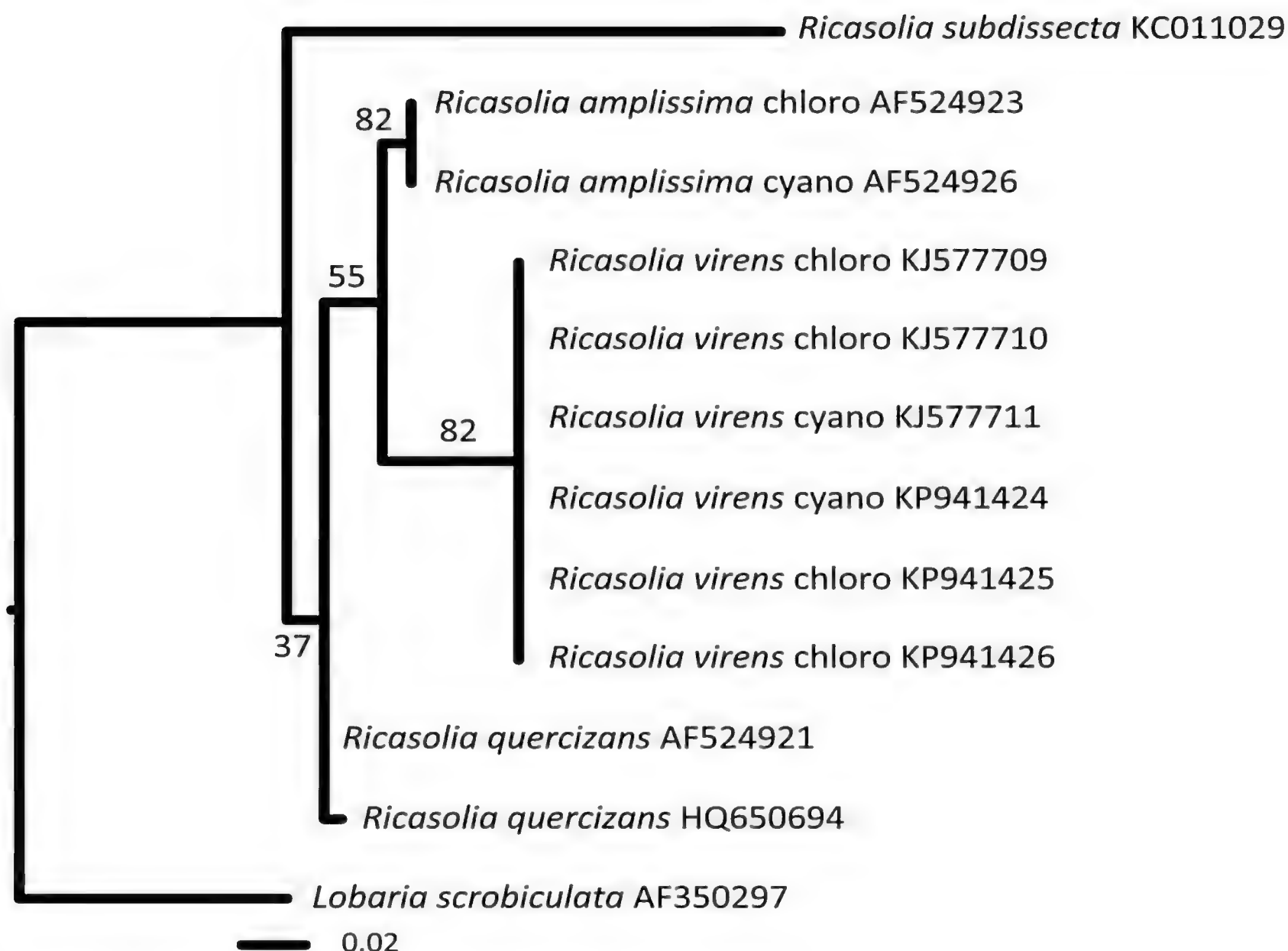


Figure 1. Most likely phylogenetic tree inferred from ITS sequences for accessions of *Ricasolia*. Values above branches refer to bootstrap support.

-patric *R. amplissima* by the thallus color, smaller thallus, lobes and spores and the lack of erumpent dendriscocauloid cephalodia (Purvis et al. 1994, Rose & Purvis 2009, Tønsberg & Jørgensen 2007). Based on our data the fungal ITS sequences of the chloromorph of *R. virens* are distinct from those of *R. amplissima* and *R. quercizans* (Michx.) Stizenb. deposited in GenBank (compared 12 Nov. 2015; see Figure 1), and can serve to discriminate between the species, especially when seeking to identify the mycobiont of dendriscocauloid thalli, which may not differ morphologically between the species.

We discovered multiple associations of two photomorphs in the immediate vicinity of well-developed chloromorphs of *R. virens*. We obtained six complete and one partial (KJ577709) ITS sequences for photomorphs of *R. virens* (Table 1). Phylogenetic inferences based on variation within the ITS region have been widely used to assess species boundaries among lichen-forming fungi based on the criterion of monophyly, including in the Peltigerales (e.g., Miadlikowska et al. 2003, 2014; Moncada & Lücking 2012; Moncada et al. 2013; Sérusiaux et al. 2009, 2011). Assuming the absence of hybridization, the ITS sequence may then serve to diagnose the specific identity of the mycobiont, and test the hypothesis that thalli with either prokaryotic or eukaryotic photobionts may be alternative photomorphs generated by a single fungal species (e.g., Goffinet and Bayer 1997, Lendemer and Goffinet 2015). The fungal ITS sequences we generated from each of the cyanomorphs was identical to those of the attached or independent chloromorphs of *R. virens* (Figure 1), suggesting that the same fungal species is involved in all thalli and thus that *R. virens* may compose photosymbiodemes of cyano- and chloromorphs. Unlike the photosymbiodemes of *R. amplissima* the cyanomorph does not develop secondarily on the chloromorph but in fact precedes the latter in the development of the green thallus.

TAXONOMIC SECTION

***Ricasolia virens* (With.) H.H. Blom & Tønsberg comb. nov.**

MycoBank #815140.

- ≡ *Lichen virens* With., A botanical arrangement of all the vegetables naturally growing in Great-Britain, p. 710. 1776. ≡ *Lobaria virens* (With.) J.R. Laundon, Lichenologist 16: 227. 1984. **TYPE:** Dillenius, J.J. 1742 [“1741”] *Historia Muscorum*. Oxford: University (Sheldonian Theatre), tab. 25, fig. 98A (lectotype [reproduction by Laundon 1984 seen; original illustration in Dillenius 1742 not seen], selected by Laundon (1984: 227)). **EPITYPE:** Dillenius herbarium of *Historia Muscorum* 98A “middle specimen” (OXF [n.v.], selected by Tønsberg & Jørgensen (2007: 145)).
- = *Lichen laetevirens* Lightf. *nom. illeg.*, Fl. Scot. 2: 852. 1777. ≡ *Parmelia laetevirens* (Lightf.) Schaer., Lich. Helv. Spec. p. 461. 1840. ≡ *Sticta laetevirens* (Lightf.) Rabenh., Deutschl. Krypt.-Fl. 2: 64. 1845. ≡ *Ricasolia laetevirens* (Lightf.) Leight., Lich.-Fl. Great Brit. p. 121. 1871. ≡ *Lobaria laetevirens* (Lightf.) Zahlbr. in Engler & Prantl, Nat. Pflanzenfam., 1: 188. 1906.
- = *Lichen herbaceus* Huds., Fl. Angl., ed. 2, p. 525. 1778. ≡ *Pulmonaria herbacea* (Huds.) Hoffm., Descr. Adumb. Plant. Lich. 1(2): 51. 1789. ≡ *Parmelia herbacea* (Huds.) Ach., Methodus, p. 218. 1803. ≡ *Lobaria herbacea* (Huds.) DC., in Lamarck & de Candolle, Fl. Franç., ed. 3, 2: 403. 1805. ≡ *Platysma herbaceum* (Huds.) Frege, Deutsch. Botan. Taschenb. 2: 165. 1812. ≡ *Sticta herbacea* (Huds.) Ach., Syn. Meth. Lich. p. 341. 1814. ≡ *Peltidea herbacea* (Huds.) Link, Grundr. Krauterk. 3: 176. 1833. ≡ *Ricasolia herbacea* (Huds.) De Not., G. Bot. Ital., sér. 2, 1(1): 180. 1846.

DESCRIPTION. – **The cyanomorph.** Thallus dendriscocauloid (Figure 2), forming fragile, convex, loose to rather compact cushions to 12 mm wide and 5 mm tall. Main branches brownish, bluish or whitish gray, terete or flattened, to 0.40 mm wide, smooth, naked to finely tomentose; terminal branchlets bluish grey or brown, terete, sometimes slightly widening towards tips; branching pattern sometimes palmate. Branches usually naked or with a few hairs evident in microscope preparations; hairs usually simple, occasionally with short side branches, moniliform, 1–5 celled, to 24 µm long; individual cells usually globose, to 7(–12) µm wide, sometimes cylindrical. Cortex brown, 1–3 cell layers thick, to 24 µm thick; cells isodiametric and 7–12 µm in diameter or elongate and 6–11(–17) × 4–8(–9.6) µm; central cord of longitudinally running hyphae 3 µm wide. Photobiont layer of uneven thickness, 29–50(–85) µm; photobiont cyanobacterial, probably *Nostoc*, bluish, sometimes pale green, single celled, irregularly rounded to irregularly ellipsoid, 5–10 × 4–7(–10) µm. Apothecia and pycnidia not observed. **The photosymbiodeme.** Composed of a primary cyanomorph and a secondary chloromorph (Figure 2). Chloromorph one (Figure 2C) to several per cyanomorph (Figures 2A and B), to 12 mm in diameter, developing from branches of the cyanomorph, evident at first as small, brownish nodules then flattened, dorsiventral, at first usually rounded to reniform, lobule-like thalli fastened to the cyanomorph by their edges (Figures 2A and B), or rarely, with a short stalk (Figure 2A, see the small lobule in the bottom left corner); cyanomorph dying and vanishing as chloromorph grows. Secondary growth of cyanomorphs from chloromorphs not seen. Apothecia and pycnidia not observed. **The chloromorph.** For complete descriptions of the mature chloromorph, see, e.g., Rose & Purvis (2009) and Tønsberg & Jørgensen (2007). Well-developed chloromorphs with spherical internal cephalodia mostly in the lower part of the medulla, visible on the underside of the thallus as brownish (contrasting with the paler surrounding cortex), ± hemispherical swellings of the lower cortex. Lobules (called *folioles* by Rose & Purvis 2009) common (i.e., in more than half of the specimens studied), mostly along damaged thallus margins and laminal cracks, varying from narrow (finger-like) and to a few mm long to more or less rounded and to 5 mm or more in diameter; rounded lobules sometimes fastened by a narrow holdfast or a stalk and thus more or less similar to the juvenile chloromorph lobules seen in the photosymbiodemes. Apothecia and pycnidia are usually frequent.

CHEMISTRY. – No substances found. Spot tests (cortex and medulla): K-, C-, KC-, P-, UV-.

ECOLOGY AND DISTRIBUTION. – *Ricasolia virens* is mainly distributed in Western Europe and Macaronesia (Degelius 1935, Rose & Purvis 2009, Tønsberg & Jørgensen 2007). In Norway, *R. virens* occurs in a broad belt along the coast from the Oslofjord area in the southeast to Nordland county in the north (*fide* The Norwegian Lichen Database; <http://nhm2.uio.no/lav/web/index.html>). *Ricasolia virens*

cyanomorphs and photosymbiodemes are known from several localities in Hordaland county in the southwest and one in Nord-Trøndelag county in Central Norway. They may be readily seen *in situ* in young populations of chloromorphs. However, some localities with large populations of well-developed and fertile *R. virens* chloromorphs on cliffs and/or tree trunks, photosymbiodemes could not be located despite extensive searches. Cyanomorphs and photosymbiodemes have been found on naked or mossy trunks of *Fraxinus excelsior* (the most common phorophyte), *Populus tremula*, and *Tilia cordata*, and on boulders in a *Corylus avellana*-*Populus tremula* stand and a *Corylus avellana* thicket.

DISCUSSION. – We were able to match the morphology of the alga-containing components of the photosymbiodemes to the chloromorphs of *Ricasolia virens* (Figure 2). These data, combined with the 100% sequence identity of the mycobionts, strongly support the hypothesis that all cyanomorphs, chloromorphs and photosymbiodemes studied involve the same fungal species. Consequently all of these morphs should be referred to as *R. virens* since the name of a lichen refers to the mycobiont.

Ricasolia virens is primarily known from Europe and Macaronesia (Rose & Purvis 2009). It is not thought to occur in North America (Esslinger 2015), but several herbaria hold specimens, mostly collected in the 1800's, that were identified as *L. virens*, *L. laetevirens* or *Sticta herbacea* (Huds.) Ach. (records viewed through <http://lichenportal.org> on 17 March 2016). We examined four specimens held in F (C0300964F, C1011324F, C1011330F, and C1011336F) and these were all conspicuously C+ (*R. virens* would be C–) and hence belong to *R. quercizans*, which is endemic and widespread in eastern North America (Brodo et al. 2001). We assume that all other North American collections filed under *R. virens* are also misidentified and likely represent *R. quercizans*.

The cyanomorph of *Ricasolia virens* is only known from Norway, and hence exhibits a much narrower geographic distribution than the chloromorph. Whether this pattern reflects significant ecological constraints on the cyanomorph or is shaped by the distribution of a specific *Nostoc* is not yet known. In the sympatric *R. amplissima*, dendriscocauloid cyanomorphs emerging from chloromorphs appear to be common throughout the range of the species in Eurasia and Africa (e.g. Degelius 1935). Whereas the geographical ranges of *R. amplissima* and *R. virens* can be defined by the ranges of their chloromorphs, the reverse is true for other species forming photosymbiodemes. A well-known example is *Sticta canariensis*, which occurs in Western Europe and Macaronesia (James & Henssen 1976, James & Purvis 2009) and in Ontario, Canada (Brodo 1994). In the Old World the chloromorph predominates in the southern and the cyanomorph in the northern part of its range (James & Henssen 1976). In the northernmost part of this range (i.e., Norway) the chloromorph is rare and present only as small lobes on well-developed cyanomorphs (Tønsberg 1990). According to James & Henssen (1976), *S. canariensis* chloromorphs do not occur outside the range of the cyanomorphs. In North America, the species is only associated with *Nostoc* (Brodo 1994), strengthening the pattern of a broader geographic distribution of the cyanomorph.

Ricasolia virens has probably at least two reproductive strategies, symbiotic (i.e., the simultaneous dispersal of the mycobiont and the photobiont via specialized lichenized thallus structures or fragments) and aposymbiotic (i.e., dispersal of the mycobiont by ascospores). The chloromorph often develops narrowly stalked lobules, which easily break off and hence could serve as diaspores. Such lobules may allow effective establishment on suitable substrates (i.e., rock, bark, moss), where they would grow to mature chloromorphs directly (i.e., mature chloromorph → chloromorph lobules → mature chloromorph). *Ricasolia virens* may potentially also propagate via fragments from the fragile cyanomorph. The presence of small cyanomorph fragments near the photosymbiodemes in some of the collections (see figure 4C) lends support to this hypothesis, but further study is needed to empirically test this.

At maturity *Ricasolia virens* forms a chloromorph harboring cyanobacterial colonies as internal cephalodia. The ontogeny of this tripartite association is not known. We hypothesize, given the observation of green lobules developing from the dendriscocauloid thallus, that when *R. virens* ascospores land on an appropriate substrate and germinate, they may first make contact with suitable, free-living cyanobacteria and form dendriscocauloid cyanomorphs. Free-living green algae are subsequently recruited or captured, leading to the development of chloromorphs. We have no indication that *R. virens* is capable of obtaining algae or cyanobacteria from other lichens. The juvenile life cycle stages of *R. virens* would or could thus be: Germinating ascospore (free-living) → cyanomorph → cyanomorph + chloromorph (photosymbiodeme) → chloromorph. *Nostoc* could be integrated *de novo* in the earliest stage of the chloromorph or acquired from the cyanomorph via the attachment stalk. The former is certainly possible, considering that the symbiotic lobules of the chloromorph acting as vegetative diaspores appear to lack cyanobacteria.

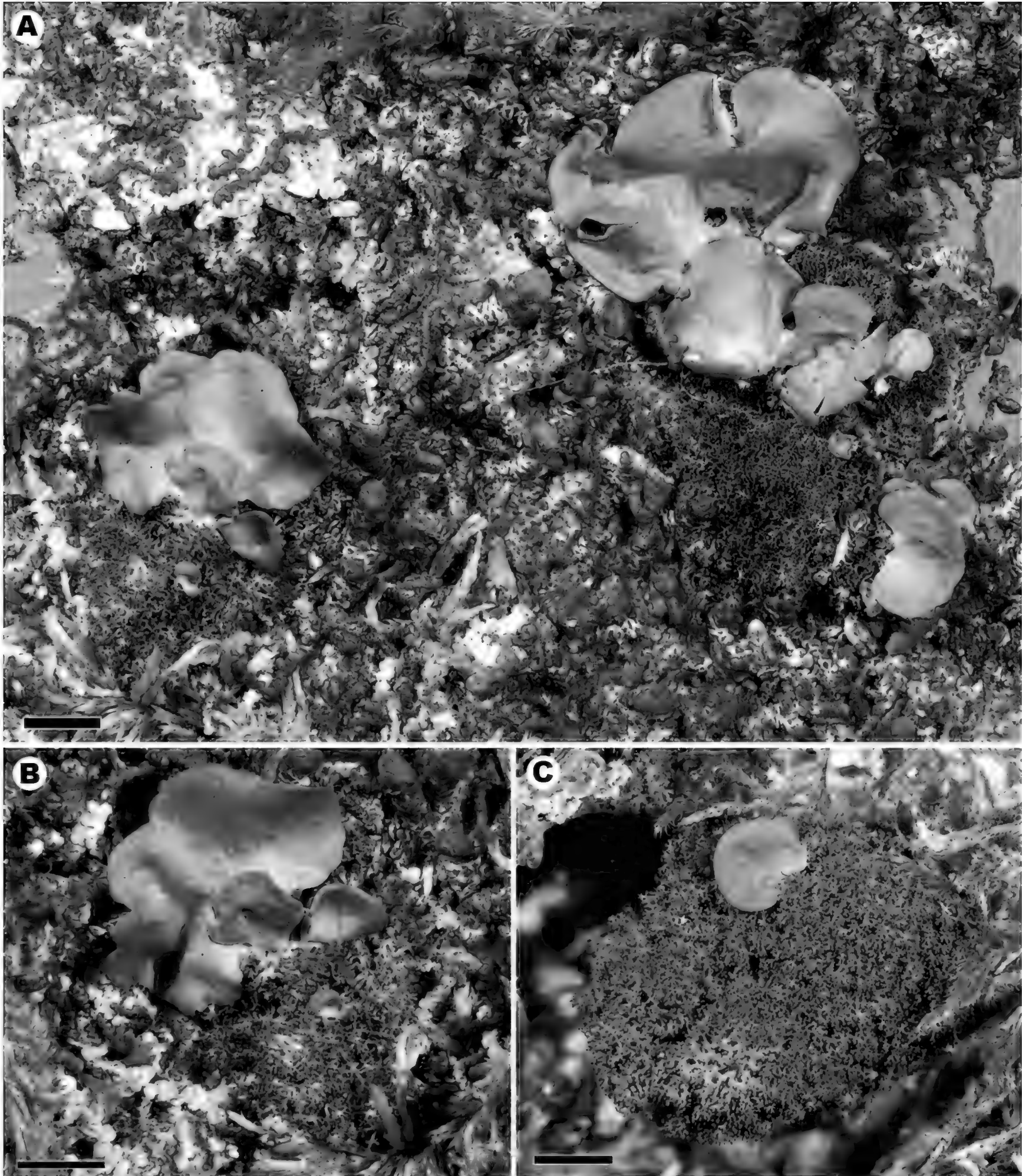


Figure 2. *Ricasolia virens* (all from Tønsberg 40924, BG). A-C, dendriscocauloid cyanomorphs without or with chloromorph lobules (photosymbiodemes). Scale bars = 2 mm. Photos by E. Timdal 2013.

Whether the juvenile cyanolichen stage following ascospore dispersal is obligate in *Ricasolia virens* is not clear. Our observations may suggest that cyanomorphs are an integral part of the life cycle of the lichen association. However, large populations of *R. virens* chloromorphs have been studied in the field without any observations of cyanomorphs, which may suggest that germinating ascospores can associate with the green photobiont and form chloromorphs without a cyanomorphic stage (i.e., chloromorph → germinating ascospore → chloromorph). Alternatively, the lack of observations of a cyanomorph stage in these populations could well be explained by the cyanomorph being ephemeral and thus rarely observed.

Fungi of the Peltigerales may be lichenized with either a cyanobacterium only or primarily with a green alga with subordinate associations with *Nostoc*. Neither association identifies only a single

homogenous clade, and transitions between these appear numerous during the diversification of the Peltigerales (see Moncada et al. 2013). The polarity of the shifts remains ambiguous. Miadlikowska & Lutzoni (2004) proposed that the association with *Nostoc* is ancestral in the Peltigerales and Högnabba et al. (2009) further argued that it was the ancestral type in the Lobariaceae. The latter study, however, suggested that *Ricasolia* species are primarily associated with a green alga, an interpretation that may change once the occurrence of a cyanoprotothallus is integrated in the character scoring and chlorolichens are considered cephalodiate and hence tripartite.

Juvenile, lichenized stages with *Nostoc* following ascospore dispersal and germination have been observed in several species of the Peltigerineae (Holtan-Hartwig unpubl., Ott 1988, Stocker-Wörgötter & Türk 1994, Yoshimura et al. 1993). Stocker-Wörgötter & Türk (1994) were able to resynthesise *Peltigera leucophlebia* (Nyl.) Gyeln. from its three symbionts under controlled laboratory conditions. They obtained primordia arising from a cyanobacterial crust, with the primordia comprising the mycobiont and a green photobiont, a cyanobacterial photobiont, or both photobionts, but only the primordia with green photobiont developed into *P. leucophlebia*-like thalli. Yoshimura et al. (1993) were able to “reform” a cyanobacterial morphotype of *Peltigera aphthosa* (L.) Willd. by culturing the lichen in vitro from undifferentiated cell aggregates. The lobes of the juvenile cyanobacterial morphotype was sublinear and had a cortex also on the lower side and were thus anatomically and morphologically different from the lobes of the cyanomorph of *P. aphthosa* as they are in the nature. Species of *Peltigera* do not have dendriscocauloid developmental stages, but the observations by Stocker-Wörgötter & Türk (1994) and Yoshimura et al. (1993) may be consistent with a hypothesis that the association with cyanobacteria is not simply a secondary event in the life cycle of a tripartite lichen, but rather may be a critical primary ontogenetic stage in their development.

Photosymbiodemes including a foliose photomorph and dendriscocauloid cyanomorph are known also from other species of *Ricasolia*, namely *R. amplissima* (e.g., James & Henssen 1976, Tønsberg & Goward 2001, Tønsberg & Holtan-Hartwig 1983, Tønsberg & Jørgensen 2007; all as *Lobaria amplissima*), *R. ravenelii* (Tuck.) Nyl. (as *Lobaria* cf. *erosa* (Eschw.) Nyl. in Jordan 1972; as *Lobaria ravenelii* in Brodo et al. 2001) and *R. quercizans* (Parker & Goffinet unpubl.). *Ricasolia amplissima* shows the same juvenile development as described above for *R. virens* (see Tønsberg & Goward 2001, Tønsberg & Holtan-Hartwig 1983). However, unlike *R. virens*, *R. amplissima* often develops cyanomorphs laminally on the chloromorph, and composite specimens with more than two cyanomorph/chloromorph ‘generations’ are occasionally seen. We have indeed observed free-living cyanomorphs bearing the chloromorph themselves producing the cyanomorph, as well as free living chloromorphs with attached cyanomorphs bearing the chloromorph.

In conclusion, *Ricasolia virens* is widely distributed in Europe and in Macaronesia, and cyanomorphs are currently known only from Norway. If a juvenile cyanolichen stage is obligate, it may have been overlooked, as it was until recently in Norway, especially if it is ephemeral, and vanishes as the chloromorph develops. *Ricasolia virens* cyanomorphs and photosymbiodemes were indeed lacking among herbarium specimens in BG and likely elsewhere, as collectors generally seek well-developed, fertile thalli, which may lack cyanomorphs. Discovering the dendriscocauloid juvenile stage throughout the distribution range would provide, in the absence of experimental observations, evidence for the obligatory nature of the cyanolichen in the life cycle of *R. virens*. The observation of an association with *Nostoc* in a dendriscocauloid thallus preceding the development of the chloromorph in *R. virens*, combined with similar observations in *R. amplissima* and the occurrence of photosymbiodemes in other species of *Ricasolia* may lead to the hypothesis that at least for *Ricasolia* the ancestral lichenization state is one with *Nostoc*, and that species with tripartite thalli arose from such an ancestor, while maintaining the ability to establish independent cyanomorphs, which may be required when lichenization is initiated (i.e., protothallus) and provide an alternative strategy for a perennial free living lichen (e.g., typical *Dendriscocaulon*).

Specimens of photosymbiodemes with cyanomorphs examined (all BG). – NORWAY:
HORDALAND: AUSTEVOLL: island Huftarøy, the E-facing slope N of Bjelland, 60°04.69'N 5°15.65'E (ED50), alt. 0–30 m, corticolous on trunk of *Tilia cordata*, 18.ix.1985, T. Tønsberg 9380 (BG-L-97740).
BØMLO: island Selsøy, Kastevik, 59.8959582°N 5.099804°E (EUREF 89), alt. 15 m, on boulder in *Corylus avellana* thicket, 30.vii.2006, H.H. Blom s.n. (BG-L-97745).
LINDÅS: the SW-facing slope W of Storset, 60°38.439'N 5°27.116'E (Datum ED50), alt. 60–90 m, corticolous on the shaded side of trunk of *Fraxinus excelsior*, 3.iv.1984, T. Tønsberg 8595 & J. Holtan-Hartwig (BG-L-97741).
OS: Storomvågen, 60°10'N 5°24'E (ED50), alt. 5 m, corticolous on trunk of *Fraxinus excelsior*, 23.iv.1989, T. Tønsberg 11522 & J. Holtan-Hartwig (BG-L-53525).
OSTERØY: Havrå, S-facing slope, downhill from road,

60°26.214'N 5°33.907'E (ED50), alt. ca. 50 m, on old, pollarded trunk of *Fraxinus excelsior* in young deciduous forest, 13.vii.1992, A. Botnen s.n. (BG-L-14801); Havrå, downhill from road, 60°26.267'N 5°34.642'E (WGS84), alt. 20–40 m, corticolous on S-facing side of mossy trunk of *Fraxinus excelsior* in S-facing slope, 28.iv.2011, T. Tønsberg 40924 (BG-L-97742). **NORD-TRØNDELAGE: FLATANGER:** Årfjordbotn, the E-facing slope W of cove Survika, 64°27.422'N 10°49.380'E, alt. 10–30 m, corticolous on mossy trunk of *Populus tremula*, 19.viii.2002, T. Tønsberg 31538 (BG-L-97743).

Specimens of chloromorphs examined for comparison. – **GEORGIA [U.R.S.S.]:** Transcaucasus: Colchis, distr. Sochi, ad corticem Aceris, 8.vi.1978, A. Vězda s.n. (BG-L-64224). **NORWAY: HORDALAND: BØMLO:** island Bømlo, E side of Grutlefjorden, S of farm Hope, Rakahopet, 59.669°N 5.169°E, alt. 0–5 m, 28.iv.2015, T. Tønsberg 44757 (BG-L-97955, BM, UPS, NY); island Spyssøya, W-facing slope ca 160 m SSE (direct) from S tip of the small island Bleikja, 59°43.418'N 5°22.249'E, alt. 10–15 m, on schists on upper part of steep, seaside rock wall, 3.iv.2015, T. Tønsberg 44732 (BG-L-97760). **GRANVIN:** Nesheimlien, ad truncus vetustos Tiliae parvifoliae, mense Maio 1936, J.J. Havaas, Lich. Norv. Occ. Exs. 128 (BG-L-59632). **OS:** Lysekloster monastery, just outside the W side of the ruin, 60°13.655'N 005°24.299'E, alt. 40–60 m, corticolous on trunk of huge *Ulmus glabra*, 10.ii.2015, T. Tønsberg 44718 (BG-L-97738).

Specimen of Ricasolia amplissima examined for comparison. – **NORWAY. HORDALAND. OS:** Lysekloster monastery, just outside the W side of the ruin, 60°13.655'N 005°24.299'E, alt. 40–60 m, corticolous on trunk of huge *Ulmus glabra*, 10.ii.2015, T. Tønsberg 44719 (BG-L-97739).

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APPENDIX – VOUCHERS AND GENBANK DATA FOR SEQUENCES USED IN THIS STUDY

Table 1. Species, morph (phenotypic expression), and voucher information (i.e., country, collector and herbarium) sampled for the sequencing of the ITS region; GenBank accession numbers for newly generated sequences are in bold.

Species	Morph	Country	Voucher Specimen	GenBank Accession No.
<i>Lobaria scrobiculata</i>	?	?	<i>M.A. Thomas 1239</i> (OTA)	AF350297
<i>Ricasolia virens</i>	chloro-	Norway	<i>M. Wedin 6192</i> (BM)	KJ577709
<i>R. virens</i>	chloro-	Norway	<i>H.H. Blom VI</i> (BG)	KJ577710
<i>R. virens</i>	cyano-	Norway	-	KJ577711
<i>R. virens</i>	photosymb.: cyano-	Norway	<i>T. Tønsberg 40924</i> (BG)	KP941424
<i>R. virens</i>	photosymb.: chloro-	Norway	<i>T. Tønsberg 40924</i> (BG)	KP941425
<i>R. virens</i>	photosymb.: chloro-	Norway	<i>T. Tønsberg 31538</i> (BG)	KP941426
<i>R. virens</i>	chloro-	Norway	<i>T. Tønsberg 44757</i> (BG)	KR632514
<i>R. amplissima</i>	chloro-	Norway	<i>E. Stocker-Wörgötter 1717</i> (TUR)	AF524923
<i>R. amplissima</i>	cyano-	Norway	<i>H. Holien s.n.</i> (TUR)	AF524926
<i>R. quercizans</i>	?	Canada	<i>T. Ahti 57089</i> (H)	AF524921
<i>R. quercizans</i>	?	?	<i>collector unknown</i> (DUKE) [AFTOL-ID 369]	HQ650694
<i>R. subdissecta</i>	?	Colombia	<i>B. Moncada 3152</i> (UDBC)	KC011029

Two new species of *Thelenella* and new reports from the Great Plains of central North America, with a worldwide key to the genus

CALEB A. MORSE¹

ABSTRACT. – Two new species of *Thelenella* are described from central North America. *Thelenella calcicola* occurs on calcareous rocks in Kansas and Missouri, and produces irregularly submuriform, 7–11 × 1-septate, colorless ascospores. *Thelenella nubifera*, based on specimens previously referred to *T. luridella*, occurs on sandstone in Georgia, Kansas, Missouri, and Oklahoma, and produces muriform, 6–9 × 3–4-septate, grey or brown pigmented ascospores. A third species from northwestern South Dakota is characterized but not formally described. *Thelenella luridella* is tentatively excluded from North America. *Thelenella brasiliensis* is reported new for Kansas, southwest Oklahoma, and Texas; *T. modesta* is reported new for Kansas and North Dakota; *T. muscorum* var. *muscorum* is reported new for or Kansas and Oklahoma; and *T. pertusariella* is reported new for Kansas. A worldwide key to *Thelenella* is provided.

KEYWORDS. – Amyloidy, Altamaha Formation, Cross Timbers, biogeography, ecoregions, Ozarks, taxonomy.

INTRODUCTION

Thelenella Nyl. (Lecanoromycetes: Ostropomycetidae: Thelenellaceae) comprises a genus of crustose lichens with a chlorococcoid photobiont, perithecia that are often immersed and in most species lack an involucrellum, a hamathecium of slender, branched and anastomosing paraphyses and simple or branched periphysoids, thick-walled, bitunicate asci with a more or less well-developed, KI– ocular chamber, 8 or fewer, mostly colorless, submuriform to muriform ascospores, and filiform conidiospores (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Fryday & Coppins 2004). The genus includes 35 corticolous, foliicolous, muscicolous, and saxicolous taxa (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Harris 1995, Kalb 1995, Etayo & Mayrhofer 2003, Fryday & Coppins 2004, Pinokiyo & Singh 2006, Aptroot et al. 2015), although the inclusion of some taxa has been, or continues to be, contentious. One species, initially described as a non-lichenized *Thelenella* (Aptroot 1999), has subsequently been shown to belong to a monotypic genus in the Trypetheliaceae, *Aptrootia* Lücking & Sipman (Lücking et al. 2007). Recent inclusion of three polysporous species by Aptroot and Schumm (2012) has been rejected by Knudsen and Kocourková (2013). Transfer of several species of the mostly foliicolous genus *Aspidothelium* Vainio to *Thelenella* by Harris (1995) and Farkas and Sipman (1997) was disputed by Lücking (2008), who postulated a distant relationship between *Aspidothelium* and the remainder of the Thelenellaceae. However, molecular sequence data have not yet been generated for *Aspidothelium*, and the placement of this genus remains uncertain. Aspidotheliaceae is presently included as a family *incertae sedis* of Ascomycota by Lumbsch and Huhndorf (2009). *Thelenella* is represented in North America by 18 species (Esslinger 2015), including two species of *Aspidothelium*.

Saxicolous members of the genus typically occur on non-calcareous rocks, and most are limited to maritime or oceanic climates (Mayrhofer & McCarthy 1991), so it was surprising to find a species growing on the sheltered face of limestone outcrops along the eastern edge of the Great Plains. In reviewing other members of the genus as part of preparing a description of this taxon, it became evident that a second species found in southeastern North America, which produces distinctive, grey to brownish ascospores,

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could not be placed satisfactorily in any known *Thelenella*. Both species are described here as new to science. A third species, known from a single small specimen from South Dakota, is discussed but not formally described. In addition, several species are newly reported for Great Plains states in North America. Further, because *Thelenella* has grown considerably since Mayrhofer's (1987) revision, a worldwide key to the genus is provided.

MATERIALS AND METHODS

Chemical analysis was conducted using standard spot tests (reagents are abbreviated following Brodo et al. (2001)) and Thin Layer Chromatography (TLC). TLC was carried out at KANU using solvent systems A and C following the methods of Orange et al. (2001). Morphological study was carried out on hand sections prepared with a razor blade and mounted in water. Medullary cells were stained with 0.3% Lugol's iodine (I) after pretreatment with 10% potassium hydroxide (K). Other microscopic characters were observed in water and images were captured with a Nikon Eclipse 80i microscope outfitted with a Lumenera INFINITY-32 digital camera and measured to the nearest 0.1 μm with Lumenera INFINITY ANALYZE imaging software. Measurements are presented as a simple range or, where sufficient material allowed, as the average (\bar{x}) \pm one standard deviation (SD), bounded by the smallest and largest observed values, and followed by the sample size (n) (i.e., (smallest observed) $\bar{x}-1\text{SD}-\bar{x}+1\text{SD}$ (largest observed) [n]). Taxonomic authorities are not included for the names of associated species as these can readily be obtained from Esslinger (2015).

TAXONOMIC SECTION

Thelenella calcicola C.A. Morse sp. nov.

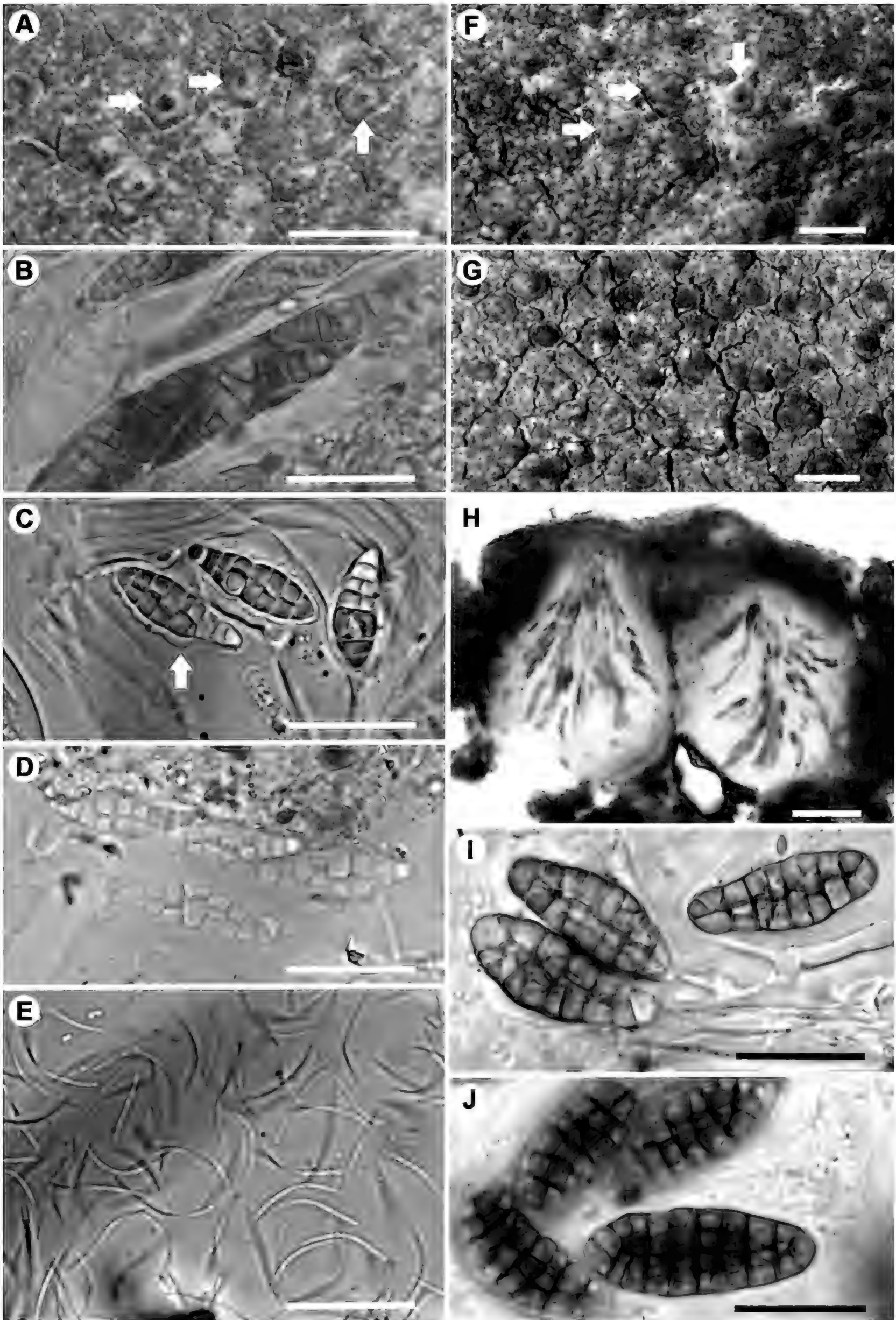
MYCOBANK #817440.

FIGURES 1A-E.

DIAGNOSIS. – Similar to *Thelenella pertusariella* (Nyl.) Vainio, but saxicolous on calcareous rocks, with a thin, continuous thallus, and irregularly submuriform, (5) 7–11 (12) \times 1 (–2)-septate ascospores, (18.5–)20.5–24.5–28.5(–33) \times (5.4–)6.3–7.3–8.3(–9.8) μm .

TYPE: U.S.A. KANSAS. JEFFERSON CO.: 0.7 mi S, 7.2 mi E of Williamstown, University of Kansas Ecological Reserves: Nelson Environmental Study Area and Rockefeller Experimental Tract: unit 4018, near 39.05132°N 95.19765°W, elev. 1000–1050 ft., N and NW-facing limestone outcrops and low cliffs in brushy, mesic, mixed hardwood forest on moderate slopes along WNW-trending ravine at head of unnamed tributary to Mud Creek, soil rocky, with some chert residuum along top of slope, on N-facing outcrops and boulders and base of W-facing outcrops, 18.i.2016, C.A. Morse 24956 (KANU 399092!, holotype; NY!, isotype).

DESCRIPTION. – Thallus epilithic, thin, continuous, membranous to cracked-areolate, matte or somewhat lustrous, finely mottled greenish grey and white or tan to yellowish brown, surface smooth, frequently dimpled with collapsed or eroded, greenish or brownish pigmented ascomata; medulla K/I–. Photobiont chlorococcoid, the cells (7–)9–12(–15) μm in diameter. Ascomata dispersed or occasionally in groups of 2–3, half-immersed in the thallus or immersed in hemispherical verrucae; verrucae 0.2–0.4 mm in diameter, concolorous with thallus except for brown ostiole, densely interspersed with colorless to brownish, \pm rectilinear crystals (these POL+ yellowish, persisting in K); involucrellum lacking. Centrum 0.15–0.3 mm in diameter, exciple ca. 20 μm thick laterally, hyaline below, pale (reddish to greenish) brown above (dull brown in K); periphysoids simple to sparsely branching, ca. 30–36 \times 1.5 μm ; paraphyses thin, ca. 1 μm wide, abundantly branching. Asci narrowly pyriform to cylindrical, 50–85 \times 11–16 μm , with (4?) 8 ascospores, KI–, with a distinct ocular chamber. Ascospores narrowly ellipsoid, spindle-shaped, or typically clavate, with the proximal (and occasionally, distal) 2–4 cells noticeably narrowed and often with pointed ends, colorless, irregularly submuriform, with (5–)7–11(–12) transverse septa and the median 1–5 cells and often the distal cell with 1 longitudinal septum each, or rarely with one median cell with 2 longitudinal septa, (18.5–)20.5–24.5–28.5(–33) \times (5.4–)6.3–7.3–8.3(–9.8) μm , L/W ratio = (2.4–)2.9–3.4–3.9(–4.6) [n = 53], immature ascospores occasionally with a perispore ca. 1–1.5 μm thick. Pycnidia black, ca. 0.5 mm in diameter, upper wall with dark greyish green pigment (dull brown in K); conidia filiform, gently curved to arcuate, ca. 14–19 \times < 1 μm .



CHEMISTRY. – Spot tests of thallus with K, C, P all negative; thallus UV-. No substances detected by TLC.

ETYMOLOGY. – The epithet *calcicola* is Latin (from *calci*- limestone + *colo* to inhabit) and refers to the preferred substrate of this species.

ECOLOGY AND DISTRIBUTION. – *Thelenella calcicola* is known from a handful of sites in the Central Tallgrass Prairie and Osage Plains/Flint Hills Prairie ecoregions of eastern Kansas and western Missouri (TNC 2007; figure 2A), where it occurs on sheltered or shaded north, east, and west-facing limestone outcrops and on larger limestone boulders in mesic, mixed oak-hickory-basswood forest from 850 to 1050 feet (259–320 meters) above sea level. Associated species include *Bacidia granosa*, *B. suffusa*, *Bacidina egenula*, *Bagliettoa baldensis*, *Botryolepraria lesdainii*, *Caloplaca* sp. of Harris and Ladd (2005), *Dermatocarpon muhlenbergii*, *Endocarpon diffractellum*, *Gyalecta jenensis*, *Gyalolechia flavovirescens*, *Lecania perproxima* auct., *Lepraria finkii*, *Squamulea subsoluta*, *Verrucaria calkinsiana*, and *V. alutacea*. Given its predilection for mesic habitats, it seems unlikely that *T. calcicola* is restricted the eastern edge of the Great Plains. Its mottled thallus gives the species the aspect of the deteriorated thalli of *Bacidia granosa* or *Bagliettoa baldensis* in the field, making it easy to overlook; additional populations should be sought in appropriate habitats elsewhere in eastern North America.

DISCUSSION. – Following Mayrhofer and Poelt (1985) and Mayrhofer (1987), the ascus type of both of the species described here might best be described as *Chromatochlamys*-type, with asci typically showing a pronounced indentation of the endoascus at the tholus, at least during some stages of development. However, whether one sees the character diagnostic for *Chromatochlamys* or *Thelenella*-type asci appears to depend on the developmental stage of the ascus being observed. This agrees with earlier findings by Harris (1995), Fryday and Coppins (2004), and Schmitt et al. (2005), who pointed out that asci in members of *Thelenella*—including the type species *T. modesta* (Nyl.) Nyl.—frequently show a distinct ocular chamber, and that *Chromatochlamys* and *Thelenella*-type asci may not be discrete types.

The variably submuriform ascospores of *Thelenella calcicola* are reminiscent of those found in *T. pertusariella*, a corticolous species that often has a whitish, fleck-like thallus and tan, partially immersed ascomata (Mayrhofer 1987). *Thelenella pertusariella* is rare in the eastern Great Plains, documented from few collections on *Quercus* (Harris & Ladd 2005, and discussed below). Several other taxa produce ascospores similar to those of *T. calcicola*. *Thelenella sychnogonioides* (Zahlbr.) R. C. Harris, a corticolous species known from coastal California and New South Wales, differs in producing ascospores that are broader than those of *T. calcicola* (20–30 × 7–11 µm, as *T. harrisii* H. Mayrhofer in Mayrhofer 1987), with 1–2 longitudinal septa. Another corticolous species, *T. justii* (Servit) H. Mayrhofer & Poelt, known from Greece, produces ascospores that are much longer than those of *T. calcicola* (35–50 × 9–12 µm *fide* Mayrhofer & Poelt 1985) and also have 1–2 longitudinal septa. *Thelenella larbalestieri* (A.L. Sm.) Coppins & Fryday, a species on siliceous rocks known only from the United Kingdom, has a brownish thallus and ascospores that are also much longer than those of *T. calcicola* (44–60 × 10–14 µm *fide* Mayrhofer & Poelt 1985; see also Fryday & Coppins 2004), and transversely septate to submuriform, with 0–2 longitudinal septa. *Thelenella vezdae* (H. Mayrhofer & Poelt) Coppins & Friday, presently known only from Austria, differs in being primarily muscicolous, or rarely corticolous on dead conifers (Mayrhofer & Poelt 1985, Fryday & Coppins 2004), as well as in having ascospores that are slightly broader than those of *T. calcicola* (22–30 × 7–10 µm *fide* Mayrhofer & Poelt 1985), with 0–2 longitudinal septa.

Figure 1 (Page 24). A–E, *Thelenella calcicola*. A, Thallus (*Morse 24956* [holotype], KANU; arrows point to ascomata), B, mature spores in ascus, after staining with K/I (*Morse 24881*, KANU), C, ascospores, with halo (*Morse 24956* [holotype], KANU; arrow points to distended area of halo), D, ascospores (*Morse 24951*, KANU), E, conidia (*Morse 24961*, KANU). F–J, *Thelenella nubifera*. F, specimen with tan thallus (*Morse 25135*, KANU [holotype]; arrows point to ascomata), G, specimen with verrucose, greenish grey thallus (*Morse 24439*, KANU), H, section through confluent ascomata, showing mature (grey) ascospores and overmature (brown) ascospores (*Morse 24439*, KANU), I, mature ascospores with 2 longitudinal septa (*Morse 23280*, KANU), J, mature ascospores with 3 longitudinal septa (*Buck 48651*, NY). Scales in A, F, and G = 1 mm; scales in B, C, D, E, I and J = 20 µm; scale in H = 100 µm.

Among the saxicolous taxa documented from central North America, *Thelenella calcicola* is unique in having narrow, irregularly submuriform ascospores and in occurring on strongly calcareous substrates. *Thelenella brasiliensis* (Müll. Arg.) Vainio, which is known from a handful of Great Plains collections on non-calcareous rocks, produces muriform ascospores with 2–3 longitudinal septa, which are also broader than those of *T. calcicola* (9–13 µm wide *fide* Mayrhofer 1987). *Thelenella nubifera* (described and discussed below) differs in having larger, muriform, brown or gray spores, and in occurring on sandstone. *Thelenella sastreana* R.C. Harris, known from a few specimens collected in Puerto Rico and Louisiana, produces ascospores that are slightly broader than those of *T. calcicola* (8–11 µm *fide* Harris 1995), with 1–2 longitudinal septa. In addition to producing slightly broader, muriform ascospores, *T. sastreana* is reported to have larger asci (85–130 × 15–20 µm), and occurs on sandstone (Harris 1995).

Additional specimens examined. – **U.S.A. KANSAS.** DOUGLAS CO.: ca. 0.5 mi N, 5.6 mi W of Lecompton, along S side of Scenic River Rd (= N 2190 Rd), 39.05°N 95.50°W, 28.iv.2015, C.A. Morse *et al.* 24489 (KANU). JEFFERSON CO.: ca. 1 mi S, 3 mi E Ozawkie, E side of Perry Lake, along Old Military Trail, near 39.21°N 95.41°W, 11.x.2015, C.A. Morse *et al.* 24866 (KANU, hb. Ladd, NY). JOHNSON CO.: ca. 1.5 mi N, 1 mi W of Aubry, Overland Park Arboretum and Botanical Garden, 38.80°N 94.69°W, 2.xi.2015, C.A. Morse 24881 (KANU, NY). MIAMI CO.: 0.25 mi N, 2 mi E of Jingo, North La Cygne State Fishing Lake and Wildlife Area, along W side of Rockville Rd, N of intersection Rockville Rd and 399th St, 37.41°N 95.66°W, 11.xii.2015, C.A. Morse 24951 (KANU). **MISSOURI.** JACKSON CO.: Kansas City, Blue River Glades Natural Area, along E side of Blue River Rd (Blue River Co Pkwy), ca. 0.75 road miles N of intersection of Blue River Rd and E 87th St, 38.98°N 94.54°–94.53°W, 29.i.2016, C.A. Morse 24961 (KANU).

***Thelenella nubifera* C.A. Morse sp. nov.**

MYCOBANK #817441.

FIGURES 1F-G.

DIAGNOSIS. – Similar to *Thelenella luridella* (Nyl.) Mayrhofer, but with pale grey to brown, muriform, 6–9(–10) × (2–)3-septate ascospores, that are (24–)30–34–38(–46) × (11.1–)11.8–13.5–15.2(–17.8) µm.

TYPE: U.S.A. KANSAS. DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, 38.78486°–38.78933°N 95.15201°–95.15531°W, elev. 970–1060 ft., complex of moderately disturbed, open mixed oak-hickory forest and woodlands on dissected, N, S and W-facing slopes above tributary to southern arm of Douglas Co. State Lake; soil sandy, with sandstone outcrops locally common in draws and on middle slopes and limestone outcrops and boulders occasional on lower slopes, on sandstone along draw on S-facing slope, 18.v.2016, C.A. Morse 25135 (KANU 399094!, holotype).

DESCRIPTION. – Thallus epilithic, thin (essentially chasmolithic on coarse-grained sandstones) to rather thick, membranaceous to areolate, sublustrous, greenish grey to pale grey or tan (yellowish in older specimens), surface smooth to finely verruculose; medulla K/I+ pale blue. Photobiont chlorococcoid, the cells 7–10(–15) µm in diameter. Ascomata dispersed or in groups of 2–3, borne in hemispherical verrucae; verrucae (0.2–)0.3–0.4(–0.7) mm in diameter, concolorous with thallus to more commonly contrasting and dark greyish or yellowish brown with darker brown ostiole, smooth to rough or warted, interspersed with a few large, colorless to brownish, ± rectilinear crystals (these POL+, persisting in K); involucrellum absent. Centrum 0.2–0.3 mm in diameter, exciple hyaline below, pale (reddish to greenish) brown or blue-grey above, K/I+ pale blue; periphysoids simple or sparsely branching, ca. 30 × 1.5 µm; paraphyses thin, ca. 1 µm wide, abundantly branching. Asci narrowly pyriform to cylindrical, ca. 113–164 × 28–36 µm, with (4?) 8 ascospores, KI–, with a distinct ocular chamber. Ascospores ellipsoid to elongate-ellipsoid, or occasionally broadly clavate, pale grey to brown early in ontogeny (brown when overmature), muriform, with 6–9(–10) transverse septa and (2–)3–4 ± parallel longitudinal septa, (24–)30–34–38(–46) × (11.1–)11.8–13.5–15.2(–17.8) µm, L/W ratio = (2.1–)2.2–2.5–2.8(–4.2) [*n* = 79]. Conidia not observed.

CHEMISTRY. – Spot tests of thallus with K, C, P all negative; thallus UV–. No substances detected by TLC.

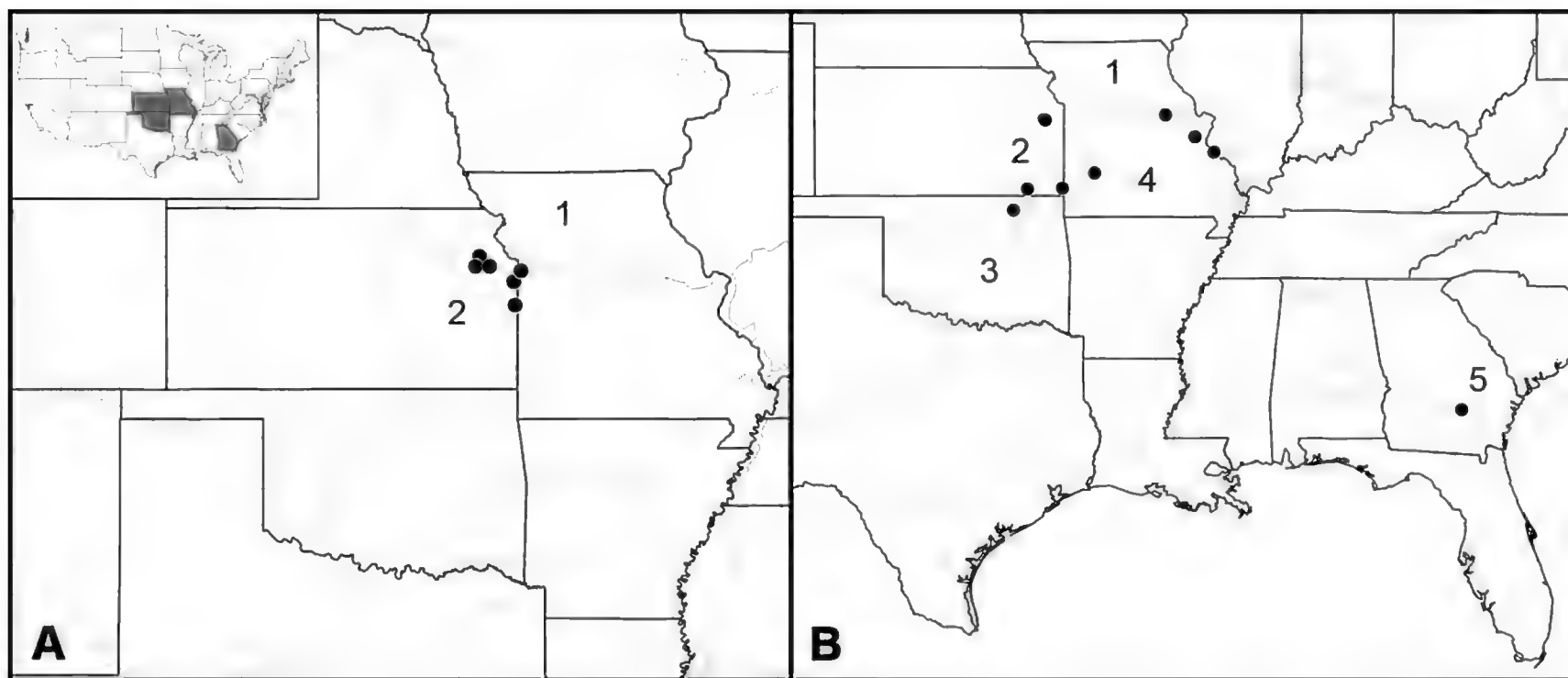


Figure 2. Distribution of *Thelenella calcicola* (A) and *T. nubifera* (B); inset map: continental U.S.A. showing the states from which the new species are known. Dashed lines indicate TNC (2007) ecoregions (1 = Central Tallgrass Prairie, 2 = Osage Plains/Flint Hills Prairie, 3 = Cross Timbers, 4 = Ozarks, 5 = South Atlantic Coastal Plain).

ETYMOLOGY. – The epithet *nubifera* is Latin (from *nubis* cloud+ *fero* to bear) and refers to the distinctive, grey or brownish spores, which are evocative of little rain clouds.

ECOLOGY AND DISTRIBUTION. – *Thelenella nubifera* is known from the Central Tallgrass Prairie and Osage Plains/Flint Hills Prairie ecoregions of eastern Kansas and western Missouri, the northern Cross Timbers ecoregion in northern Oklahoma, the Missouri Ozarks, and the South Atlantic Coastal Plain ecoregion in Georgia (TNC 2007; figure 2B). It occurs on shaded or exposed chert and non-calcareous sandstone, growing on cobbles, boulders, outcrops, and cliffs from 195 to 1050 feet (60–320 meters) above sea level. Specimens from the eastern Ozarks were collected in mesic, wooded ravines and from shaded cliffs, while specimens from Kansas, western Missouri, and Oklahoma were found in open oak woodlands and in sandstone glades. The Georgia collections came from the Altamaha Grit Formation of the Broxton Rocks area. Whether the species' presence there may be taken as an indication that *T. nubifera* is more broadly distributed throughout the southeastern U.S.A. is unclear, as the Broxton Rocks are known to harbor disjunct floristic elements from the Appalachian Mountains (Griffin et al. 1994). In Kansas and Oklahoma, *T. nubifera* frequently occurs with *Fellhanera crucitignorum*, and may have similar ecological requirements through the Cross Timbers (Morse & Ladd 2013). Other associated species include *Anisomeridium distans*, *Arthonia lapidicola*, *Bacidina delicata*, *Endocarpon pallidulum*, *Fellhanera silicis*, *Ionaspis alba*, *Lepraria finkii*, *T. brasiliensis*, *Thelidium minutulum*, *Trapelia placodioides*, *Rinodina oxydata*, and *Rinodina siouxiana*.

DISCUSSION. – Orange et al. (2009) have observed that the medulla of *T. muscorum* (Fr.) Vainio var. *muscorum* is K/I+ pale blue, noting the utility of this character in identification of sterile material. This reaction was observed in both *T. muscorum* var. *muscorum* and *T. nubifera*, as well as in specimens of *T. brasiliensis*, *T. modesta*, and an unnamed species of *Thelenella* (*Thelenella* sp. 1 below), examined for this study. Mayrhofer (1987) found the presence of amyloid (“J+”) medullary tissue to be unique to *T. elliottii* Vainio, Harada (1999) described the thallus of *T. luridella* to be K/I-, and a K/I+ blue reaction was not observed in specimens of *T. calcicola* and *T. pertusariella* examined for this study. However, the presence of hemiamyloid tissue may be more common in the genus than published reports suggest.

Pigmented ascospores have been reported from only three other species in *Thelenella*. *Thelenella hassei* (Zahlbr.) H. Mayrhofer, a corticolous species that occurs in coastal southern California, is otherwise very similar to *T. nubifera*, differing principally in its ecology and in producing ascospores with only 2–3-

longitudinal septa (Mayrhofer 1987). A second corticolous species, *T. melanospora* Etayo & H. Mayrhofer documented from the Mediterranean region (Israel, Italy, Spain), produces smaller ascospores ($18\text{--}22\text{--}(27) \times 9\text{--}12\text{ }\mu\text{m}$ *fide* Etayo & Mayrhofer 2003). *Thelenella fernandeziana* (Zahlbr.) H. Mayrhofer, a saxicolous species on felsic basalt known from the Juan Fernandez Islands in Chile, produces broader ascospores ($15\text{--}22\text{ }\mu\text{m}$ wide *fide* Mayrhofer 1987).

Although they are invariably pigmented pale grey to brown in the ascus, it is possible to overlook the pigmentation in very pale ascospores of the new species. In these cases, the pigment is best observed in optical section of the cell walls, or at lower magnifications ($100\text{--}400\times$; see figure 1H). Moreover, ascospores of *Thelenella nubifera* often appear colorless very early in ontogeny, and careful examination of fully mature ascospores may be required to distinguish the species from *T. luridella*. (Indeed, several specimens cited here were initially determined as belonging to the latter species.) Ascospores of *T. luridella* are also ellipsoid to elongate-ellipsoid and broadly overlap with *T. nubifera* in size ($30\text{--}45 \times 12\text{--}19\text{ }\mu\text{m}$ *fide* Mayrhofer 1987), with 7–9 transverse septa and 3 or more longitudinal septa. *Thelenella luridella* has a tropical and humid subtropical distribution and has been reported from the Caribbean (Dominica, Trinidad), South America (Bolivia, Brasil), Arabian Peninsula (Socotra), southern Africa (Lesotho, South Africa), Asia (Japan, Hong Kong, Nepal), and New Zealand (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Aptroot & Seaward 1999, Harada 1999, Baniya et al. 2010, McCarthy 2014). The species was reported for North America by Harris (1995), based on vouchers from Georgia, and subsequently from the Ozarks by Harris and Ladd (2005). However, these specimens are referred here to *T. nubifera*. Although one specimen determined as *T. luridella* (Mississippi, Wilkinson Co.: Harris 11488 [NY]) was not located, and thus not available for review, that species is tentatively excluded from North America.

In the field, *Thelenella nubifera* is most likely to be confused with *T. brasiliensis*, which appears to be the more common species in the region, frequently occurs in the same communities and on the same substrate types. In addition to producing smaller, colorless ascospores, *T. brasiliensis* may be distinguished from the new species by its smooth verrucae, which are largely concolorous with the thallus, brownish only in the immediate vicinity of the ostiole. In *T. nubifera*, the darkly pigmented area around the ostiole is typically more extensive. In some specimens of *T. nubifera* examined (*e.g.*, Morse 24439, see figure 2G), this pigmented area comprises the greater part of the verrucae, making them contrast strongly with the surrounding thallus.

Additional specimens examined. – **U.S.A. GEORGIA.** COFFEE CO.: Broxton Rocks Ecological Preserve, 9 mi NE of Broxton, 3 mi S of Ocmulgee River, $31^{\circ}44'N\ 82^{\circ}45'W$, 16–17.xii.1993, R.C. Harris 32595 (NY), R.C. Harris 32596 (NY). JEFF DAVIS CO.: 0.4 mi E of Coffee County line on Georgia Hwy 107, ca. 11 mi NE of Broxton, ca. 2 mi S of Ocmulgee River, $31^{\circ}45'N\ 82^{\circ}43'W$, 5.ii.1995, W.R. Buck 27509 (NY). **KANSAS.** CHEROKEE CO.: Spring River Wildlife Area, N of NE 100th St, 0.25 mi N of Old US 96, $37^{\circ}10'53''N\ 94^{\circ}38'58''W$, 13.iv.2004, W.R. Buck 46423 (NY), R.C. Harris 48885 (NY). DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, $38.79^{\circ}N\ 95.15^{\circ}W$, 26.ii.2012, C.A. Morse 23280 & K.J. Morse (KANU), 24.vi.2016, C.A. Morse 25177 (KANU); 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, $38.81^{\circ}N\ 95.20^{\circ}W$, 24.x.2010, C.A. Morse 22125 & K. Logan (KANU), 14.iii.2016, C.A. Morse 25090 (KANU); 1.75 mi N, 0.75 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, private land just N of University of Kansas Ecological Reserves Wall Woods, $38.81^{\circ}N\ 95.20^{\circ}W$, 8.ii.2015, C.A. Morse et al. 24439 (KANU, NY), C.A. Morse et al. 24443 (KANU), C.A. Morse 25117 (KANU), C.A. Morse 25123 (KANU). MONTGOMERY CO.: 0.5 mi N, 5.5 mi W Liberty, S side of Montgomery Co State Lake, $37.16^{\circ}N\ 95.70^{\circ}W$, 8.xi.2006, C.A. Morse 14407 (KANU). **MISSOURI.** DADE CO.: Bona Glade Natural Area, along MO 215 just E of bridge over Maze Creek Arm of Stockton Lake, $37^{\circ}32'43''N\ 93^{\circ}41'30''W$, 16.iv.2005, W.R. Buck 48651 (NY). GENEVIEVE CO.: Magnolia Hollow Conservation Area, along White Sands Road, 5.5 mi NE of Hwy V, Bloomsdale Quad, $38^{\circ}02'13''N\ 90^{\circ}08'00''W$, 30.iii.2006, J.C. Lendemer et al. 6741 (PH). JEFFERSON CO.: Don Robinson property, N of Sand Cut Road, ca. 1.2 mi E of Hwy NN, along tributary of La Barque Creek, “Club Moss Hollow,” $38^{\circ}23'48''N\ 90^{\circ}41'31''W$, 24.iii.2006, W.R. Buck 49647 (NY). MONTGOMERY CO.: Graham Cave State Park, jct of roads to Boat Ramp and Indian Glade Campground, $38^{\circ}54'17''N\ 91^{\circ}34'47''W$, 27.x.2001, W.R. Buck 40597 (NY). **OKLAHOMA.** OSAGE CO.: 7 mi N, 3 mi E Barnsdall. Woolaroc Wildlife Preserve: along small stream above Swan Lake, $36.66^{\circ}N\ 96.11^{\circ}W$, 7.iv.2007, C.A. Morse 14697b & D. Ladd (KANU).

***Thelenella* sp. 1.**

Another, evidently undescribed, species is known from the Great Plains, collected once as a small admixture in northwest South Dakota. In the field, it is most likely to be confused with a species of *Staurothele* or *Verrucaria*, and thus is likely to be overlooked. A provisional description is provided below, but formal recognition of this taxon awaits additional collections.

DESCRIPTION. – Thallus epilithic, rather thick, areolate, pale grey; medulla inspersed with large crystals, K/I+ pale blue. Photobiont chlorococcoid, the cells ca. 7.5–14 µm in diameter. Ascomata mostly 1 per areole, immersed in the thallus; ostiole greenish brown, brown in K; involucrellum lacking. Centrum ca. 0.45 mm in diameter; exciple hyaline (except at ostiole), thin below, thickened to ca. 100 µm thick above, periphysoids unbranched; paraphysoids ca. 1 µm wide, branching. Asci cylindrical, ca. 73–84 × 21–23 µm, with (4?)8 ascospores, KI–, without a distinct ocular chamber. Ascospores narrowly ellipsoid to ellipsoid or broadly fusiform, colorless, muriform, 5–7 × 1–3-septate, ca. 20–33 × 8.5–14 µm. Pycnidia not observed.

ECOLOGY AND DISTRIBUTION. – *Thelenella* sp. 1 is known from a single small specimen collected from non-calcareous siltstone in an open ponderosa pine (*Pinus ponderosa*) forest on moderate to steep, west-facing slope with brushy understory at about 3420 feet (1042 meters) above sea level.

DISCUSSION. – *Thelenella* sp. 1 is unusual in producing a thick, areolate, ashy grey thallus, and appears to be ecologically distinct from other saxicolous members of the genus. The species should be compared with *T. inductula* (Nyl.) H. Mayrhofer, which has been documented from coastal southern California and eastern Arizona, as well as Macaronesia and Portugal, and which differs in producing an ochre to light reddish brown thallus (Mayrhofer 1987, 2002b). While other species examined for this study were found to be at least very pale K/I+ blue, iodine reactivity has been reported elsewhere in the genus only in the muscicolous species *T. muscorum* var. *muscorum* (Orange et al. 2009), and in *T. elliottii*, which Mayrhofer (1987) described as having a “J+” medulla. *Thelenella elliottii* is known only from the Caribbean (St. Vincent) and differs from the Great Plains specimen in producing a thin, rimose-areolate thallus and ascospores with 3–4 longitudinal septa (Mayrhofer 1987).

Specimen examined. — **U.S.A. SOUTH DAKOTA.** HARDING CO.: ca. 3.5 mi S, 18 mi E of Buffalo, Custer National Forest: East Half: Slim Buttes: Reva Gap: vicinity of Reva Gap Campground, below The Castles, 45.53°N 103.18°W, 10.vii.2009, C. A. Morse 19635b (KANU).

NEW DISTRIBUTIONAL RECORDS FOR *THELENELLA* IN THE GREAT PLAINS

In addition to the taxa described above, ongoing fieldwork has yielded a number of noteworthy distributional records for *Thelenella* in the southern Great Plains. These are briefly enumerated below.

Thelenella brasiliensis has been reported by Harris (1995) from New Jersey and Oklahoma, and by Harris and Ladd (2005) from the Ozarks (based on records from Arkansas, Missouri, and northeast Oklahoma). These are the first reports for Kansas, southwest Oklahoma, and Texas. Specimens were collected from cobble, boulders, outcrops, and cliffs of non-calcareous rock (fine to coarse sandstones, granite, and Sioux Quartzite) in sheltered situations in mixed-grass and tallgrass prairie, open oak-hickory woodlands, and sandstone glades.

Specimens examined. — **U.S.A. KANSAS.** DOUGLAS CO.: 1.75 mi N, 0.25–0.5 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 17.x.2014, C.A. Morse 24337 & A. Glauser (KANU), 14.iii.2016, C.A. Morse 25079 (KANU); 4.5 mi S, 2.25 mi W of Stull, Clinton Lake Wildlife Area: above Coblenz Marsh, 38.90°–38.91°N 95.50°–95.49°W, 28.x.2012, C.A. Morse et al. 23836 (KANU). ELLSWORTH CO.: 4 mi S, 2 mi E Carneiro, Kanopolis State Park: Horsethief Canyon area, 38.67°–38.68°N 98.00°W, 27.iv.2006, C.A. Morse 12691 & C.C. Freeman (KANU). MONTGOMERY CO.: 0.5 mi N, 5.5 mi W Liberty. S side of Montgomery Co. State Lake, 37.16°N 95.70°W, 8.xi.2006, C.A. Morse 14392b (KANU). WOODSON CO.: 6 mi E of Toronto, Woodson County State Fishing Lake & Wildlife Area on SE side, 37.79°N 95.84°W, 28.ix.2008, C.A. Morse 18057b & K. Logan (KANU), 3.ix.2011, C.A. Morse 23100 & K.J. Morse (KANU). **OKLAHOMA.** COMANCHE CO.: ca. 4.25 mi N, 2–2.5 mi W of Cache, Wichita

Mountains Wildlife Refuge: N side of Eagle Mountain and vicinity of The Narrows, 34.70°N 98.67°–98.68°W, 14–15.iv.2010, *C.A. Morse 20515c* (KANU). OKMULGEE CO.: 0.5–0.75 mi N, 6 mi W of jct of US Hwys 62 & 75 on S side of Okmulgee, Okmulgee State Park, on peninsula just N of Blackjack Area tent camping sites, 35.62°N 96.07°W, 6.ix.2009, *C.A. Morse 20203c & K. Logan* (KANU). **TEXAS.** PARKER CO.: ca. 2 mi N, 4.5 mi E jct of US Hwys 180W and 281 in Mineral Wells, Lake Mineral Wells State Park: NW side of lake, just N and E of Cross Timbers Camping Area, 32.83°N 98.04°W, 26.iv.2009, *C.A. Morse 18491b & D. Ladd* (KANU).

Thelenella modesta was reported by Harris (1995) from California and Minnesota and by Tucker and Egan (2009) from Texas. Ascospores examined for this study were (19–)22–29(–37) × (8–)8.5–13(–16) µm, slightly smaller than previously reported (25–42 × 11–17 µm *fide* Mayrhofer 1987). These are the first reports for Kansas, where the species was collected from distal branches of green ash (*Fraxinus pennsylvanica*) and redbud (*Cercis canadensis*) in upland tallgrass prairie remnants, and for North Dakota, where the species was found on aspen (*Populus tremuloides*) and a large cottonwood (*P. deltoides*).

Specimens examined. — **U.S.A. KANSAS.** BOURBON CO.: ca. 4 mi S, 5.5 mi W of Uniontown, SW side of Bourbon Co. State Fishing Lake and Wildlife Area, 37.79°N 95.08°W, 11.xii.2015, *C.A. Morse 24948* (KANU); 3 mi S, 0.5 mi E of Fulton, Unique Prairie, 37.96°N 94.70°–94.71°W, 2.iv.2016, *C.A. Morse et al. 25098* (KANU). **NORTH DAKOTA.** ROLETTE CO.: 5.5 mi W of St. John, Wakopa Wildlife Management Area, 48.95°N 99.83°W, 24.viii.2015, *M.K. Advaita 17897-B* (KANU). TOWNER CO.: 0.5 mi E, 1.5 mi N of Cando, U.S. Waterfowl Production Area, 48.51°N 99.19°W, 22.viii.2015, *M.K. Advaita 17839* (KANU).

Thelenella muscorum var. *muscorum* was reported by Harris (1995) and Fryday and Coppins (2004) from Colorado, Minnesota, and North Carolina, by Mayrhofer (2002a) from Arizona, California, and northwestern Mexico, and the Ozarks (Harris & Ladd 2005, D. Ladd personal comm.). The eight-spored variety, *T. muscorum* var. *octospora* (Nyl.) Coppins & Fryday appears to be restricted to the western North America, with reports from Colorado, Idaho, Montana, Oregon, and Saskatchewan (Anderson 1962, McCune et al. 2014). *Thelenella muscorum* var. *muscorum* is new for Kansas and Oklahoma. All specimens were collected on bryophytes overgrowing sandstone in open oak-hickory woodlands.

Specimens examined. — **U.S.A. KANSAS.** DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, 38.78°N 95.15°W, 18.v.2016, *C.A. Morse 25147* (KANU); 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & Co Rd 1055 in Baldwin City. University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 24.x.2010, *C.A. Morse 22122 & K. Logan* (KANU), 14.iv.2015, *C.A. Morse 24470a & A. Glauser* (KANU). CHAUTAUQUA CO.: 3 mi N, 1 mi W of Hale, West Liberty Cemetery and environs, 37.28°N 96.04°W, 7.ix.2009, *C.A. Morse 20256b & K. Logan* (KANU). FRANKLIN CO.: 3 mi S, 1 mi E Homewood., Ottawa University Natural History Reservation (“Ferndale”), 38.47°N 95.36°W, 5.iii.2008, *C.A. Morse 16341a & K. Logan* (KANU). LINN CO.: 2.75 mi W of jct of KS Hwys 7 & 52 in Mound City, Dingus Natural Area, 38.13°N 94.87°W, 31.i.2009, *C.A. Morse 18236 & K. Logan* (KANU). WOODSON CO.: 6 mi E of Toronto, Woodson Co. State Fishing Lake & Wildlife Area on SE side, 37.79°N 95.84°W, 28.ix.2008, *C.A. Morse 18036 & K. Logan* (KANU), 18.iii.2012, *C.A. Morse 23327 & K.J. Morse* (KANU). **OKLAHOMA.** OSAGE CO.: 7.5 mi N, 3 mi E Barnsdall, Woolaroc Wildlife Preserve: start of nature trails area, just NW of museum complex, 36.67°N 96.11°W, 6.iv.2007, *C.A. Morse 14632b & D. Ladd* (KANU); 7.5 mi N, 3.75 mi E Barnsdall, Woolaroc Wildlife Preserve: just W of Little Rock Creek, N of outlet of Clyde Lake, 36.67°N 96.10°W, 7.iv.2007, *C.A. Morse 14802a & D. Ladd* (KANU).

Thelenella pertusariella was reported by Harris (1995) from Michigan and Minnesota, and by Harris and Ladd (2005) from Oklahoma. Harris (1995) noted that North American specimens produced ascospores with more septa than were found in European material. Ascospores examined for this study did not differ significantly from the description by Mayrhofer (1987), with 5–10 transverse septa and infrequent longitudinal septa (with only one or two cells in each ascospore divided longitudinally). However, ascospores were (16–)19–26(–32) × 5.5–7.5 µm, slightly narrower than reported for the species by Mayrhofer (1987) (22–35 × 7–10 µm) or Harris (1995) (23–34 × 7–11 µm). These are the first reports for Kansas. Both specimens were collected from oaks (*Quercus*) in mesic, mixed oak-hickory(-basswood) forest.

Specimens examined. — **U.S.A. KANSAS.** DOUGLAS CO.: 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 8.ii.2009, *C.A. Morse 18256* (KANU). LEAVENWORTH CO.: Fort Leavenworth Military Reservation: W-central part, area roughly bounded by ravine 0.25 mi E of Bell Point, between reservoir (to N) and radio tower (to S), and area E of reservoir and below (E of) Hancock Hill, in vicinity of Girl and Boy Scout Camps, 39.36°–39.37°N 94.93°W, 14.v.2008, *C.A. Morse 16480b* (KANU).

WORLDWIDE KEY TO *THELENELLA*

When measuring ascospores, users should take care to base their observations on mature ascospores, as immature ascospores are frequently smaller than the values reported in published accounts, and overmature ascospores are frequently much narrower. Further, because ascospore size is critical in determining many species of *TheLENella*, it is important (if often difficult!) to measure a sufficient number of ascospores to ascertain the typical size range. In order to avoid confusion regarding septation and size, counts of the number of transverse and longitudinal septa are separated by a slash [/], while indications of length and width are separated here by a multiplication sign [×]. Thus, a species with muriform ascospores with 7 to 10 transverse septa and 3 to 4 longitudinal septa will be indicated as “ascospores 7–10 / 3–4-septate”. Species with transversely septate to submuriform ascospores are indicated in the same way, so it is important to bear in mind that “ascospores 7–10 / 0–2-septate” means that some ascospores may be transversely septate only. Measurements and distributional information were taken principally from Mayrhofer (1987) and Harris (1995), and supplemented by descriptions in Santesson (1952), Mayrhofer and Poelt (1985), Mayrhofer and McCarthy (1991), Kalb (1995), Harada (1999), Seaward and Aptroot (2000), Etayo and Mayrhofer (2003), Fryday and Coppins (2004), Pinokiyo and Singh (2006), Lücking (2008), Kinalioglu and Aptroot (2011), Aptroot et al. (2014), and McCune et al. (2014). Distributions are specified to the best of the author’s ability, especially for seldom-collected taxa and for species with documented ranges in North America. Unfortunately, many taxa remain very poorly known, so both measurements and distributional information must be regarded with caution. Some distinctions between species remain uncertain, and additional fieldwork is needed to characterize the range of morphological and ecological variability among members of the genus.

1. Muscicolous 2
 2. Ascospores 7–8 / 0–1-septate, 22–30 × 7–10 µm; Europe (Austria) *T. vezdae* (H. Mayrhofer & Poelt) Coppins & Friday
 2. Ascospores richly muriform, ≥ 40 × 15 µm 3
 3. Ascospores 2–4 per ascus, ca. 21 / 2–7-septate, 60–100 × 20–27 µm; northern Africa (Tunisia), Europe (broadly distributed), North America (U.S.A.: broadly distributed)..... *T. muscorum* (Fr.) Vainio var. *muscorum*
 3. Ascospores 6–8 per ascus, 11–14 / 1–3-septate, 40–60 × 15–20 µm; northern Europe, North America (Canada: Saskatchewan, northwest U.S.A.: Idaho, Oregon) *T. muscorum* var. *octospora* (Nyl.) Coppins & Fryday
1. Not muscicolous (corticolous, foliicolous, or saxicolous) 4
 4. Saxicolous 5
 5. Ascospores ≥ 30 µm long (species with largest ascospore 32 [36] µm long key both ways) 6
 6. Involucrellum present 7
 7. Ascospores 5–7 / 3-septate, 20–32 × 10–16 µm; Subantarctic islands (Kergulen, Marion, Heard islands)..... *T. kerguelena* (Nyl.) H. Mayrhofer
 7. Ascospores ≥ 7 / 3-septate, ≥ 34 × 14 µm 8
 8. Thallus pale greenish grey; ascospores 12–16 / 3–4 septate, 34–52 × 14–20 µm; Antarctic islands (Bouvet and South Georgia islands), Subantarctic islands (Kergulen, Heard, Macquaire islands) *T. mawsonii* (C.W. Dodge) H. Mayrhofer & P.M. McCarthy
 8. Thallus ochre to light grey-brown; ascospores 7–11 / 3 septate, 35–47 × 14–19 µm; western North America (Mexico: Baja California, U.S.A.: California) *T. weberi* H. Mayrhofer
 6. Involucrellum absent 9

9. Ascospores pigmented grey or brown early in ontogeny 10
 10. Thallus light brown to grey brown; ascospores 7–9 / 2–5?-septate, 30–45 × 15–22 µm; on felsic basalt; western South America (San Juan Fernandez Islands)
 *T. fernandeziana* (Zahlbr.) H. Mayrhofer
 10. Thallus tan to greenish grey; ascospores 6–9(–10) / 3–4-septate, (24–)30–38(–46) × (11.1–)11.8–15.2(–17.8) µm; on sandstone; southeast North America (U.S.A.: Kansas, Missouri, Oklahoma, Georgia) *T. nubifera* C.A. Morse
 9. Ascospores colorless (although overmature ascospores may become brown) 11
 11. Ascospores transversely septate to submuriform 12
 12. Ascospores 11–14 / 0–2 septate, 44–60 × 10–14 µm; on siliceous rocks; western Europe (United Kingdom)
 *T. larbalestieri* (A.L. Sm.) Coppins & Fryday
 12. Ascospores (5–)7–11(–12) / 1(–2)-septate, (18.5–)21–29(–33) × (5.4–)6.3–8.4(–9.8) µm; on calcareous rocks; central North America (U.S.A.: Kansas, Missouri)..... *T. calcicola* C.A. Morse
 11. Ascospores muriform, with 3 or more longitudinal septa 13
 13. Ascospores broadly ellipsoid, 7–11 / 3–4-septate, 20.5–35.5 × 12–18.5 µm; Oceania (southern Australia: Bass Strait Islands, Tasmania)
 *T. tasmanica* H. Mayrhofer & P.M. McCarthy
 13. Ascospores elongate-ellipsoid to subcylindric to spindleform, ≥ 30 µm long .
 14
 14. Ascospores with 7–9 / 3+-septate, 30–45 × 12–19 µm; southern Africa (Lesotho, South Africa), southern Asia (Arabian Peninsula: Socotra, Japan, Hong Kong, Nepal), Caribbean (Dominica, Trinidad), southern South America (Bolivia, Brazil), southeast Oceania (New Zealand)
 *T. luridella* (Nyl.) Mayrhofer
 14. Ascospores with 9–17 / 3–5-septate, ≥ 40 µm long 15
 15. Ascocarp 0.2–0.4 mm in diameter; ascospores 9–13 / 3-septate, 40–55 × 14–20 µm; southern Asia (Indonesia: Java)
 *T. marginata* (Groenh.) H. Mayrhofer
 15. Ascocarp 0.5–1 mm in diameter; ascospores 11–17 / 3–5-septate, 50–82 × 22–33 µm; Antarctic (South Shetland Islands)
 *T. antarctica* (M. Lamb) Ericksson
 5. Ascospores ≤ 30 (36) µm long 16
 16. Involucrellum present; ascospores 5–7 / 3-septate, 20–32 × 10–16 µm; Subantarctic islands (Kergulen, Marion, Heard islands) *T. kerguelena*
 16. Involucrellum absent 17
 17. Ascospores transversely 3-septate, 18–23 × 6.5–7.5 µm; Caribbean (Puerto Rico)
 *Thelenella* sp. Buck 18291A of Harris (1995)
 17. Ascospores submuriform or muriform 18
 18. Ascospores irregularly submuriform, (5–)7–11(–12) / 1(–2)-septate, (18.5–)21–29(–33) × (5.4–)6.3–8.4(–9.8) µm; on calcareous rocks; central North America (U.S.A.: Kansas, Missouri) *T. calcicola*
 18. Ascospores muriform, with 2 or more longitudinal septa; on non-calcareous rocks 19
 19. Ascospores 6–7 / 2–3 septate, 18–20 × 8–11 µm; eastern North America (U.S.A.: New York) *T. humilis* R. C. Harris
 19. Ascospores 20–30 (36) µm long 20
 20. Ascospores broadly ellipsoid, 20.5–35 × 10–18.5 µm wide, with 3–4 longitudinal septa 21
 21. Thallus pale to dark greenish grey to grey-brown; ascospores 7–11 / 3–4-septate, 20.6–35.3 × 11.8–18.5 µm; Oceania (southern Australia: Bass Strait Islands, Tasmania) *T. tasmanica*
 21. Thallus whitish to yellowish grey; ascospores 6–7 / 3–4 septate, 22–27 × 10–14 µm; on volcanic rock; Caribbean (St. Vincent)
 *T. elliotii* Vainio

20. Ascospores elongate-ellipsoid, $\leq 8\text{--}13\ \mu\text{m}$ wide, with 1–3 longitudinal septa 22
22. Ascospores 6–9 / 1–2 septate, $20\text{--}27 \times 8\text{--}11\ \mu\text{m}$, with \pm pointed ends; Caribbean (Puerto Rico), southern North America (U.S.A.: Louisiana)..... *T. sastreana* R.C. Harris
22. Ascospores 5–8 / 1–3 septate, $9\text{--}14\ \mu\text{m}$ wide, with \pm rounded ends .
..... 23
23. Thallus thick, rimose-areolate to areolate 24
24. Thallus ochre to pale reddish brown; ascospores 6–8 / (1)2–3+-septate, $24\text{--}36 \times 9\text{--}13\ \mu\text{m}$; on lava, granite, schist, slate; southwest Europe (Portugal), Macaronesia, southwest North America (U.S.A.: Arizona, California)
..... *T. inductula* (Nyl.) H. Mayrhofer
24. Thallus ashy grey; ascospores 5–7 / 1–3-septate, $20\text{--}32 \times 9\text{--}14\ \mu\text{m}$; on non-calcareous siltstone; central North America (U.S.A: South Dakota) *Thelenella* sp. 1 of this paper
23. Thallus thin, membranaceous to rimose 25
25. Thallus pale ochre to yellow-brown, membranous-rimose, matt; ascomata 0.5–0.8 mm in diameter; ascospores 5–7 / 2–3-septate, $24\text{--}30 \times 9\text{--}13\ \mu\text{m}$; northern Europe (Svalbard), northeast North America (Canada: Ellesmere Island; Greenland: Disko Island)
..... *T. sordidula* (Th. Fr.) H. Mayrhofer
25. Thallus pale brown, olive-brown, or olive-green, membranous to membranous-rimose, matt to glossy; ascomata 0.2–0.4 mm in diameter; ascospores 6–7 / 2+-septate, $20\text{--}32 \times 9\text{--}13\ \mu\text{m}$; western Africa, Asia (China?), Central America (Costa Rica), South America (Brazil), eastern North America (U.S.A.: Arkansas, Kansas, Missouri, New Jersey, Oklahoma, Texas).....*T. brasiliensis* (Müll. Arg.) Vainio
4. Species corticolous or foliicolous 26
26. Species corticolous 27
27. Involucrellum present; ascospores transversely 11–19-septate, fusiform, $50\text{--}100 \times 14\text{--}19\ \mu\text{m}$; Central America (Costa Rica, Panama), southern North America (Mexico: Veracruz, U.S.A.: Florida), South America (Brazil, Paraguay)
... *T. geminipara* (Malme) R. C. Harris [= *Aspidothelium geminiparum* (Malme) R. Sant.]
27. Involucrellum absent (although ascoma wall reported to be carbonized in *A. lateralis*); ascospores irregularly transversely septate, submuriform to muriform (transversely septate to submuriform in *A. lateralis*), $\leq 60\ \mu\text{m}$ long 28
28. Ascospores becoming grey or brown early in ontogeny, muriform with 2–4 longitudinal septa 29
29. Ascospores $25\text{--}40 \times 10\text{--}17\ \mu\text{m}$; southwest North America (U.S.A.: California) *T. hassei* (Zahlbr.) H. Mayrhofer
29. Ascospores $18\text{--}22(\text{--}27) \times 9\text{--}12\ \mu\text{m}$; Mediterranean (Israel, Italy, Spain).....
..... *T. melanospora* Etayo & H. Mayrhofer
28. Ascospores colorless (although overmature ascospores may become brown), septation various 30
30. Ascospores with 11–15 transverse septa, $35\text{--}60\ \mu\text{m}$ long 31
31. Ascospores submuriform, with 1–2 longitudinal septa, $35\text{--}50 \times 9\text{--}12\ \mu\text{m}$, with pointed ends; southern Europe (Greece)
..... *T. justii* (Servít) H. Mayrhofer & Poelt
31. Ascospores muriform, with 3 longitudinal septa, $42\text{--}60 \times 13\text{--}19\ \mu\text{m}$, with rounded ends; southern Asia (Indonesia), South America (Paraguay) ...
..... *T. paraguayensis* Malme
30. Ascospores with 6–10 transverse septa, $\leq 42\ \mu\text{m}$ long 32

32. Ascospores muriform, with 1–4 longitudinal septa, and $\geq 9 \mu\text{m}$ wide 33
33. Thallus greyish green; ascospores ellipsoid, 6–8 / 1–3-septate, $20\text{--}28 \times 9\text{--}15 \mu\text{m}$; Caribbean (Jamaica) *T. follmannii* Kalb
33. Ascospores 7–9 / 2–4-septate, $\geq 25 \times 11 \mu\text{m}$ 34
34. Thallus yellowish grey, greyish brown, or brownish; asci cylindrical to clavate; ascospores ellipsoid to elongate-ellipsoid, with 2–3 longitudinal septa, $25\text{--}42 \times 11\text{--}17 \mu\text{m}$; northern Africa (Morocco), Asia (Israel, Turkey), Australia, Europe (broadly distributed), Indian Ocean (Chagos Archipelago), western North America (U.S.A.: California, Kansas, Minnesota, North Dakota, Texas) *T. modesta* (Nyl.) Nyl.
34. Thallus whitish to olivaceous; asci obclavate to pyriform; ascospores ovoid, with 2–4 longitudinal septa, $30\text{--}38 \times 13\text{--}15 \mu\text{m}$; southeast North America (U.S.A.: Florida) ... *T. rappii* R. C. Harris
32. Ascospores transversely septate to (irregularly) submuriform, with 0–2 longitudinal septa, and $\leq 11 \mu\text{m}$ wide 35
35. Ascomata 0.4–0.55 mm in diameter; ostiole lateral; ascospores 7–9 / 0–2-septate, $27\text{--}32 \times 9\text{--}10.5 \mu\text{m}$; South America (Brasil) *T. lateralis* Aptroot & M. Cáceres
35. Ascomata ≤ 0.4 mm in diameter; ostiole apical; ascospores various; distribution various (but not known from South America).. 36
36. Species corticolous on dead spruce or muscicolous on dead mosses; thallus whitish or brownish; ascospores 7–8-transversely septate, with 0–1 longitudinal septa, $22\text{--}30 \times 7\text{--}10 \mu\text{m}$; central Europe (Austria) *T. vezdae*
36. Species corticolous; ascospores submuriform to muriform, with 1–2 longitudinal septa; distribution various 37
37. Thallus indistinct, fleck-like to membranous-cracked, dirty whitish to yellowish; ascomata 0.2–0.4 mm in diameter; ascospores 6–10 / 1–2-septate, $22\text{--}35 \times 7\text{--}10 \mu\text{m}$ [central North American specimens (16–)19–26 (32) $\times 5.5\text{--}7.5 \mu\text{m}$]; Europe (Austria, Finland, Norway, Russia, Sweden, Switzerland), central North America (U.S.A.: Kansas, Michigan, Minnesota, Oklahoma) *T. pertusariella* (Nyl.) Vainio
37. Thallus discontinuous to membranous or membranous-cracked, light brown to light grey; ascomata 0.1–0.3 mm in diameter; ascospores 6–7 / 1–2-septate, $20\text{--}30 \times 7\text{--}11 \mu\text{m}$; southwest North America (U.S.A.: California), Oceania (southeast Australia: New South Wales) *T. sychnogonioides* (Zahlbr.) R. C. Harris
26. Species foliicolous 38
38. Ascospores transversely septate with ≥ 11 septa and $\geq 50 \mu\text{m}$ long 39
39. Involucrellum present; ascospores transversely 11–19-septate, fusiform, $50\text{--}100 \times 14\text{--}19 \mu\text{m}$; Central America (Costa Rica, Panama), southern North America (Mexico: Veracruz, U.S.A.: Florida), South America (Brazil, Paraguay) *T. geminipara*
39. Ascospores 15–29-transversely septate, $50\text{--}90 \times 12\text{--}20 \mu\text{m}$; Central America (Costa Rica, Guatemala, Honduras, Panama), southern North America (Mexico: Oaxaca, Veracruz, U.S.A.: Florida), South America (Brazil, Ecuador, French Guiana, Guyana, Peru) *T. fugiens* (Müll. Arg.) R. C. Harris [= *Aspidothelium fugiens* (Müll. Arg.) R. Sant.]
38. Ascospores submuriform or muriform, with at least 1 longitudinal septum OR (if transversely septate) $\leq 40 \mu\text{m}$ long 40

40. Ascomata 0.15–0.18 mm in diameter; ascospores 3–7 / 0–2-septate, (16) 25–40 × 7–12 µm; southern Asia (India) *T. indica* Pinokiyo & Kr.P. Singh
40. Ascomata ≥ 0.2 mm in diameter; ascospores ≥ 8 / 1-septate, ≥ 34 × 12 µm; distribution various (but not known from India) 41
41. Involucrellum present 42
42. Ascomata 0.3–0.5 mm in diameter; ascospores 20 × 1–3-septate, 35–70 × 15–25 µm; Central America (Costa Rica, El Salvador), southern North America (U.S.A.: Florida), South America (Brazil, Ecuador, Peru)
..... *T. cinerascens* (Vainio) R. C. Harris [= *Aspidothelium cinerascens* Vainio]
42. Ascomata 0.2–0.3 mm in diameter; ascospores 17–20 × 1–3-septate, 35–45 × 12–20 µm; Central America (Costa Rica, Guatemala), South America (Ecuador)
..... *T. trichothelioides* (Serús. & Vězda) R.C. Harris
[= *Aspidothelium trichothelioides* Serús. & Vězda]
41. Involucrellum absent 43
43. Ascomata 0.4–0.6 mm in diameter; ascospores 8–17 / 1–4-septate, 35–64 × 13–20 µm, ellipsoid; northern Oceania (New Guinea)
..... *T. verruculosa* (R. Sant.) ined. (see Farkas & Sipman 1997)
[= *Aspidothelium verruculosum* R. Sant.]
43. Ascomata 0.3–0.4 mm in diameter; ascospores 11–15 / 2–3-septate, 45–65 × 17–23 µm, elongate to spindleform; western Africa (Tanzania)
..... *T. fusispora* Vězda & H. Mayrhofer

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Further contributions to the knowledge of lichenicolous fungi and lichenicolous lichens of the Northwest Caucasus, Russia

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ABSTRACT. – Fifty-nine species of lichenicolous fungi are reported from the Northwest Caucasus. *Abrothallus stroblii*, *Acremonium antarcticum*, *Arthonia coronata* and *Sclerococcum serusiauxii* are new to Asia and Russia. *Lichenopeltella cladoniarum* is new to Asia. *Cercidospora stenotropae*, *Cladophialophora parmeliae*, *Clypeococcum cladonema*, *Intralichen lichenum*, *Lichenoconium aeruginosum* and *L. cargillianum* are new to Russia. *Arthonia clemens*, *Cercidospora* cf. *macrospora*, *Cornutispora lichenicola*, *Lichenopeltella cetrariicola*, *Niesslia cladoniicola*, *Phaeopyxis punctum*, *Roselliniella cladoniae*, *Sphaerellothecium abditum*, *Stigmidium hafellneri*, *S. solorinarium* and *Zwackhiomyces berengerianus* are new to the Caucasus. *Cetrelia* is a new host genus for *Lichenoconium cargillianum*, *Flavoparmelia* for *Clypeococcum cladonema*, *Megaspora* for *Pyrenidium actinellum* s.l., and *Cladonia chlorophaea* s.l. and *C. coniocraea* are both new host species for *Niesslia cladoniicola*.

KEYWORDS. – Biodiversity, biogeography, ecology, Asia.

INTRODUCTION

Knowledge of lichenicolous fungi of the Caucasus has recently been summarized by Zhurbenko and Otte (2012) in a synopsis comprising 72 species, which illustrated that the group has long been neglected in that region. To fill that knowledge gap a special project supported by the Russian Foundation for Basic Research was initiated that has already resulted in a number of publications (Zhurbenko & Kobzeva 2014; Zhurbenko et al. 2015b, c). Additional information on the subject has also recently been published by Urbanavichus and Ismailov (2013), Urbanavichene and Urbanavichus (2014) and Urbanavichus and Urbanavichene (2012; 2014; 2015a, b). Here we contribute further information on lichenicolous fungi of the region and increase the overall diversity known from the Caucasus to 210 species in 90 genera. It is noteworthy that the documented diversity of lichenicolous fungi in the biogeographically comparable region of Bavaria is approximately 370 species in 135 genera (Brackel 2014), which suggests that lichenicolous mycobiota of the Caucasus is still far from being completely understood. Indeed, assuming that the levels of diversity would be similar for different taxonomic groups in the two regions, a comparison of the most speciose lichenicolous genera in Bavaria and the Caucasus suggests additional species remain to be found in such genera as *Cercidospora*, *Chaenothecopsis*, *Dactylospora*, *Endococcus*, *Nectriopsis*, *Phoma*, *Polycoccum*, *Pronectria*, *Stigmidium*, *Taeniolella* and *Tremella* (Figure 1).

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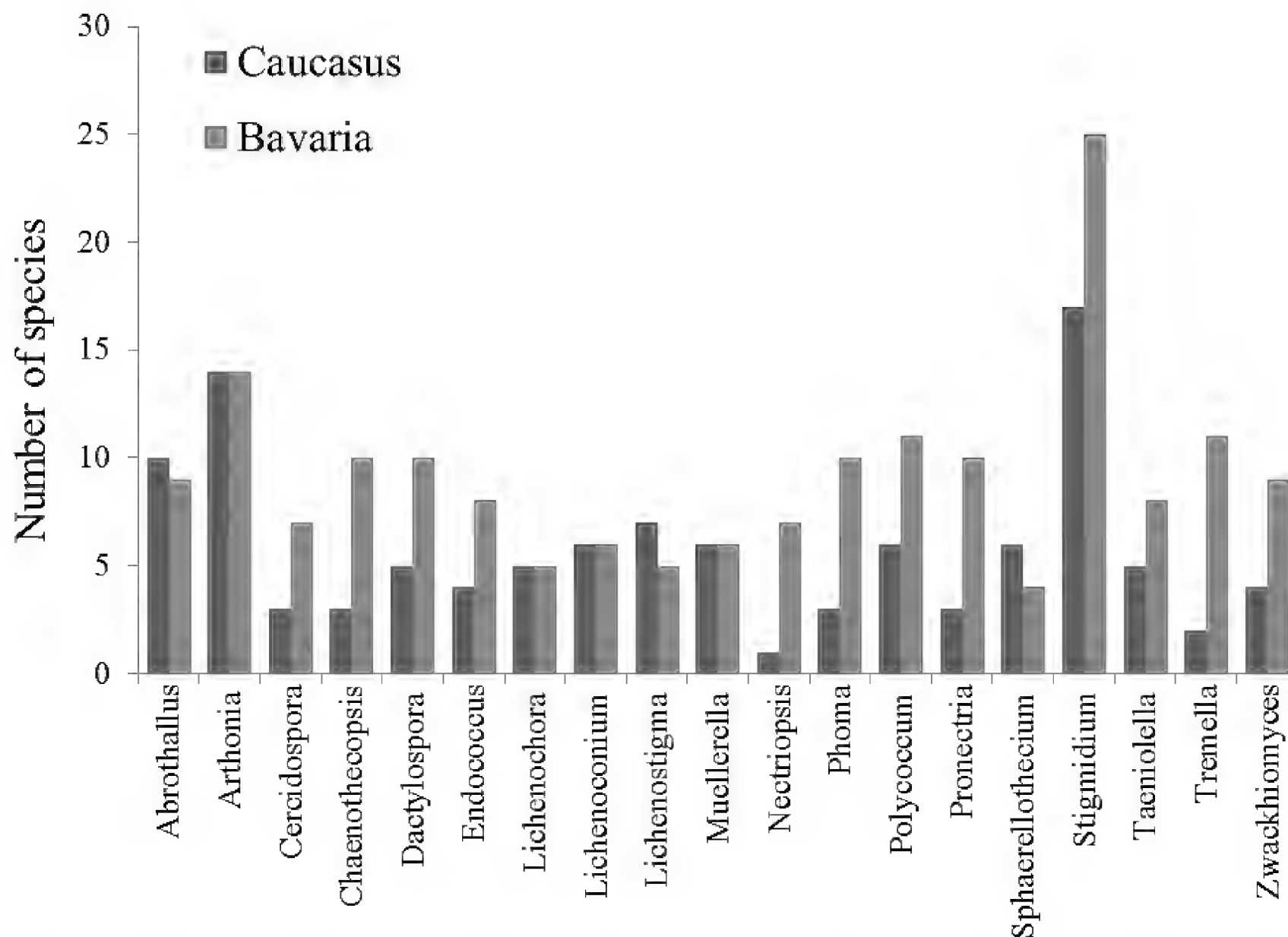


Figure 1. Bar graph comparing the number of species in the most speciose genera of lichenicolous fungi reported from Bavaria by Brackel (2014) and from the Caucasus (see references and data presented herein).

MATERIALS AND METHODS

This study is based on 105 specimens of lichenicolous fungi and lichens mainly collected by the first author in the Caucasian Biosphere Reserve, Northwest Caucasus (Figure 2). Examined specimens are housed in the mycological herbarium of the V.L. Komarov Botanical Institute in St.-Petersburg, Russia (LE). Microscopical examination was carried out using a Zeiss microscope Axio Imager A1 equipped with Nomarski differential interference contrast optics (DIC) in water, 10% KOH (K), Lugol's iodine, directly (I) or after a KOH pre-treatment (K/I), or brilliant cresyl blue (BCr). The length, breadth and length/breadth ratio (l/b) of asci, ascospores and conidia are given (where $n > 10$) as: (min–){X–SD}–{X+SD}(–max), where “min” and “max” are the extreme observed values, X the arithmetic mean and SD the corresponding standard deviation. Measurements were taken from water mounts, unless otherwise indicated.

Rather than repeat the full data for the twenty-one localities from which specimens were collected these data are summarized below. The localities are referenced in the text by the numerical abbreviation that appears in bold on the list.

Summary of collecting localities

- 1:** Russia, Republic of Adygeya, Caucasian Biosphere Reserve, northeastern spur of Mt. Tybga, 43°52'48"N, 40°15'59"E, elev. 2480 m, alpine vegetation and siliceous rocks.
- 2:** Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Mt. Tybga, 1 km NE of Turovyi cabin, 43°54'03"N, 40°16'38"E, elev. 2040 m, *Betula litvinovii* forest.
- 3:** Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Abago pastureland boundary, Mt. Ekspeditsiya, 43°54'48"N, 40°15'43"E, elev. 1950 m, *Pinus sylvestris* ssp. *kochiana* forest and siliceous rocks among mountain meadows.

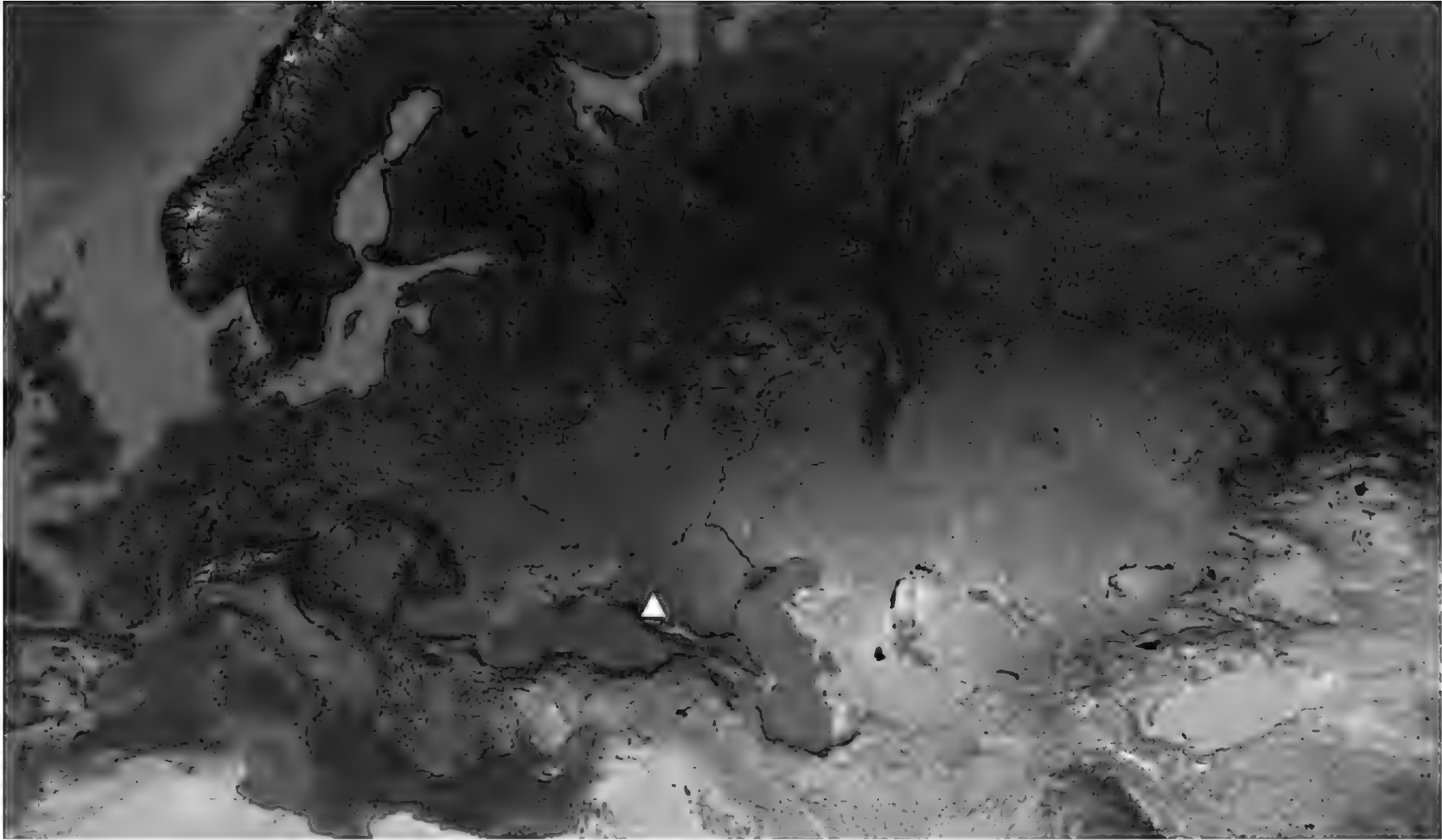


Figure 2. Location of the study area within the broader context of Europe and Asia.

- 4: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Abago pastureland boundary, Dom Kotova cabin, 43°56'55"N, 40°12'31"E, elev. 1770 m, *Fagus orientalis*-*Abies nordmanniana*-*Acer trautvetteri* forest.
- 5: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Guzeripl' settlement, 44°00'05"N, 40°08'21"E, elev. 680 m, *Fagus orientalis*-*Carpinus betulus* forest.
- 6: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Guzeripl' settlement, near the junction of Filimonov Creek and Molchepa River, 43°59'25"N, 40°08'56"E, elev. 770 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 7: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Belaya River 2 km upstream of Guzeripl' settlement, 43°59'21"N, 40°07'28"E, elev. 680 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 8: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, confluence of Belaya and Armyanka Rivers, 43°56'85"N, 40°06'18"E, elev. 674 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 9: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, confluence of Belaya and Rufabgo Rivers, 44°15'48"N, 40°10'19"E, *Fagus orientalis* forest.
- 10: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Lagonaki Upland, Azishskii pass, 44°04'33"N, 40°00'58"E, elev. 1750 m, mixed forest with *Abies nordmanniana*.
- 11: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Lagonaki Upland, Armyanskii pass, 43°58'15"N, 39°56'30"E, elev. 1750 m, *Fagus orientalis* forest.
- 12: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, headwaters of Armyanka River, 44°00'33"N, 39°59'42"E, elev. 1680 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 13: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, foot of Mt. Fisht at the headwaters of Belaya River, 43°57'34"N, 39°55'48"E, elev. 1580 m, *Abies nordmanniana*-*Betula litwinowii*-*Acer trautvetteri*-*Sorbus aucuparia* forest and calcareous rocks.
- 14: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, southeastern spur of Mt. Fisht, near Malyi Fishtinskii glacier, 43°57'08"N, 39°55'42"E, elev. 1640 m, *Abies nordmanniana*-*Betula litwinowii*-*Acer trautvetteri*-*Sorbus aucuparia* forest and calcareous rocks.
- 15: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, between Mt. Fisht and Mt. Pshekho-Su, 43°58'16"N, 39°54'23"E, elev. 2170 m, alpine vegetation.

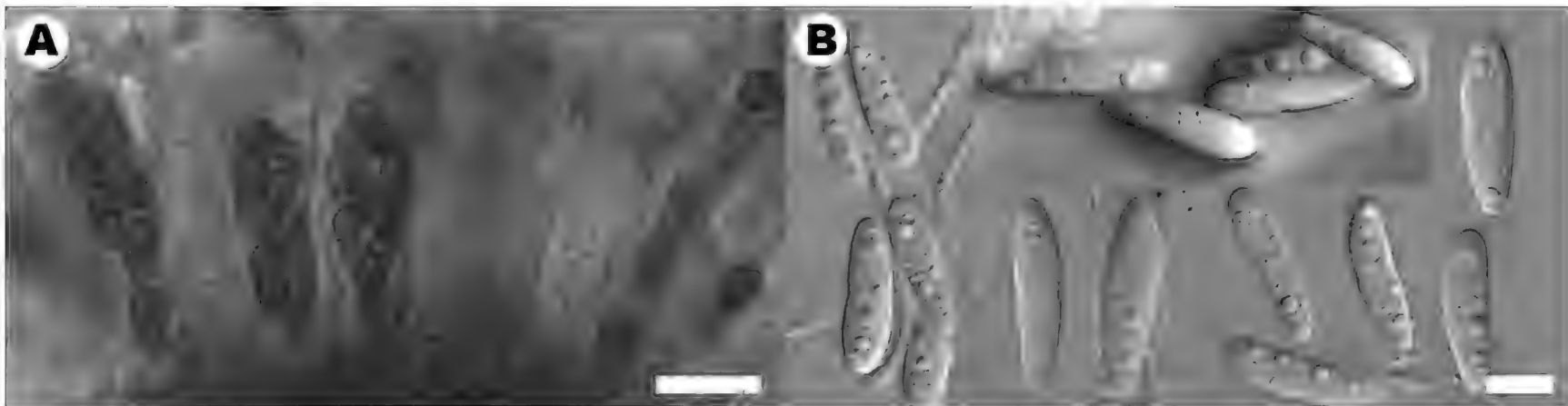


Figure 3. A, ascomata of *Abrothallus stroblii* in cross section (in water; LE 309428). B, ascospores of *Cercidospora* cf. *macrospora* (in water; LE 264366). Scale bars = 10 µm.

- 16:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, confluence of Urushten and Malaya Laba Rivers, Chernorech'e cabin, 43°55'59"N, 40°41'01"E, elev. 800 m, open rocks beside a road in *Fagus orientalis* dominated forest.
- 17:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, N spur of Mt. Armovka, 43°55'10"N, 40°40'28"E, elev. 1150 m, *Fagus orientalis* forest.
- 18:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, northern spur of Mt. Armovka, 43°53'27"N, 40°39'47"E, elev. 1830 m, *Betula litwinowii* forest.
- 19:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, northern spur of Mt. Armovka, 43°52'28"N, 40°39'20"E, elev. 2250 m, alpine vegetation and siliceous rocks.
- 20:** Russia, Krasnodar Territory, 1 km S of Dzhankhot settlement, top of Mt. Svyatoi Niny, 44°27'34"N, 38°09'49"E, elev. 330 m, *Quercus petraea*-*Pinus brutia* var. *pityusa* forest.
- 21:** Russia, Krasnodar Territory, 15 km SE of Gelendzhik, Zhane River valley, "valley of 1000 mounds", 44°33'13"N, 38°15'01"E, elev. 150 m, *Fagus orientalis*-*Carpinus caucasica*-*C. orientalis* forest.

THE SPECIES

The annotated list of new and interesting records is presented below and arranged alphabetically by genus and species. Lichenicolous lichens are denoted by an asterisk (*).

Abrothallus bertianus De Not.

NOTES – According to Lawrey and Diederich (2016) this species is restricted to the lichen genus *Melanelixia*, however, it has also been recorded on some other lichen genera including *Tuckermannopsis* (Brackel 2014, Cole & Hawksworth 2001, Santesson et al. 2004). The species has been previously reported in Asian Russia from the Caucasus, Yamal-Nenets Autonomous Area, Trans-Baikal Territory, Khabarovsk Territory and Jewish Autonomous Region (Zhurbenko 2008, 2014; Zhurbenko & Otte 2012; Zhurbenko & Tugi 2013; Zhurbenko & Yakovchenko 2014).

Specimen examined – **13:** on *Tuckermannopsis sepincola* (apothecia, thallus), 18.viii.2014, P.M. Zhurbenko s.n. (LE 264406a).

Abrothallus peyritschii (Stein) I. Kotte

NOTES – The species was formerly known in the Caucasus from an old record published by Vainio (1899) from the Republic of North Ossetia-Alania and a recent report from Republic of Adygeya (Urbanavichus & Urbanavichene 2014). Here it is newly reported for Krasnodar Territory of Russia. It is further known in Asian Russia only from the Trans-Baikal and Kamchatka Territories (Zhurbenko & Yakovchenko 2014, Zhurbenko et al. 2012b).

Specimens examined (all on thalli of *Vulpicida pinastri*) – **2:** 8.viii.2014, M.P. Zhurbenko 14182 (LE 264446); **10:** 16.viii.2014, M.P. Zhurbenko 14183 (LE 264486); **13:** 23.viii.2014, M.P. Zhurbenko 14184 (LE 264436).

Abrothallus stroblii Hafellner

NOTES – The specimen examined perfectly fits the species protologue except for having slightly smaller ascospores (Figure 3A herein; $(6.5-7.2-8.8(-9.8) \times (3.0-3.3-4.1(-4.6) \mu\text{m}$, l/b = $(1.8-2.0-2.4(-2.5)$ (n = 63) in our material vs. $8-9.8-11 \times 4-4.6-5 \mu\text{m}$ *fide* Hafellner et al. 2008). So far

the species has previously been reported only from the Austrian Alps where it grew on *Menegazzia terebrata*. It is here is documented as new to Russia and Asia.

Specimen examined – **7:** on *Menegazzia terebrata* (moribund parts of thallus), 14.viii.2014, *M.P. Zhurbenko 14230* (LE 309428).

***Acremonium antarcticum* (Speg.) D. Hawksw.**

NOTES – Hawksworth (1979) suggested this is not a genuine lichenicolous fungus but rather an opportunist that colonizes damaged lichen thalli. In the examined material the infection caused local reddening while the surrounding parts of host thalli appeared healthy. So far the species has been reported on lichen species of the genera *Caloplaca*, *Hypogymnia*, *Parmelina* and *Xanthoria* (Diederich & Sérusiaux 2000, Eichler et al. 2010, Etayo & Rosato 2008, Kukwa & Flakus 2009, Suija et al. 2009) from the Antarctic and Europe (Luxembourg, Germany, Poland and Estonia). It is newly reported from Asia and Russia.

Specimen examined – **14:** on *Rusavskia elegans* (thallus), 28.viii.2014, *P.M. Zhurbenko & A. A. Kobzeva 1475a* (LE 264455a).

***Arthonia clemens* (Tul.) Th.Fr.**

NOTES – This species has been reported from various lichen genera, including *Aspicilia*, *Caloplaca*, *Lecanora* or *Protopannaria* (Alstrup et al. 2004, Hafellner & Türk 1995, John et al. 2004, Zhurbenko & Santesson 1996), but in a strict sense is probably restricted to species of *Rhizoplaca* (Lawrey & Diederich 2016). It is newly reported from the Caucasus.

Specimen examined – **19:** on *Rhizoplaca chrysoleuca* (apothecial discs), 28.viii.2014, *P.M. Zhurbenko s.n.* (LE 264306b).

***Arthonia coronata* Etayo**

NOTES – In the protologue the ascospores of this species were reported to be somewhat smaller than those of the material cited here ((11.8–)13.4–15.8(–18.1) × (4.7–)5.0–5.6(–5.7) μm, l/b = (2.3–)2.5–3.1(–3.4) (n = 36, in water, I or K) in our material vs. 11–14 × 3.5–5 μm *fide* Etayo 1996). The species was described from France and Spain as growing on soralia of *Flavoparmelia caperata* and subsequently reported from Italy, Germany, Scotland, Sweden, Canada and the U.S.A., also colonizing *Parmeliopsis hyperopta* and various species of *Cladonia* (Coppins & Aptroot 2009, Lendemer & Harris 2012, Svensson & Westberg 2010, van den Boom 2013). It is newly documented for Russia and Asia.

Specimens examined (both on soralia of *Flavoparmelia caperata*) – **5:** 12.viii.2014, *M.P. Zhurbenko 14319a* (LE 309391a); **21:** 6.ix.2014, *M.P. Zhurbenko 14205* (LE 309395).

***Arthonia molendoi* (Frauenf.) R. Sant.**

NOTES – This widely distributed species has been reported from a wide range of hosts including *Buellia*, *Cladonia*, *Lepraria*, *Phaeophyscia* or *Rhizoplaca* (Alstrup & Hawksworth 1990, Kondratyuk & Kudratov 2002, Øvstedal & Lewis Smith 2001). In a strict sense it is likely restricted to members of the genera *Caloplaca* and *Xanthoria* as traditionally defined in a broad sense (Lawrey & Diederich 2016). It has been previously reported from the Caucasus from two finds in the Republic of Adygeya and the Karachayevo-Circassian Republic (Urbanavichus & Urbanavichene 2014, Zhurbenko & Kobzeva 2014) and here is newly documented for Krasnodar Territory. The species is further known in Asian Russia only from the Krasnoyarsk Territory and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999).

Specimens examined (both on apothecia and thalli of *Rusavskia elegans*) – **10:** 16.viii.2014, *M.M. Semichaevskaya s.n.* (LE 264275); **15:** 22.viii.2014, *M.P. Zhurbenko 14234* (LE 264255).

***Athelia arachnoidea* (Berk.) Jülich**

NOTES – This is a destructive pathogen of many epiphytic lichens (mainly species of Physciaceae), that also colonizes green coccoid algae and mosses, and sometimes grows saprobically on bark or wood (Parmasto 1998, Yurchenko & Golubkov 2003). It was previously known in Asian Russia only from the Sverdlovsk Region (Shiryaev et al. 2010) and the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014). Here the species is newly documented for Republic of Adygeya.

Specimen examined – **5:** on *Physconia distorta* (thallus), 15.viii.2014, *M.P. Zhurbenko 14300* (LE 309369).

****Caloplaca epithallina* Lynge**

NOTES – This is an obligately lichenicolous lichen that grows on a number of distantly related lichen genera, such as *Acarospora*, *Aspicilia*, *Dimelaena*, *Lecanora*, *Montanelia*, *Pleopsidium*, *Psorinia*, *Rhizocarpon*, *Rhizoplaca* (most reports are from this genus), *Stereocaulon* and *Umbilicaria* (Poelt 1985, Rambold & Triebel 1992). So far it has been reported in the Russian Caucasus from the Kabardino-Balkarian and the Karachayevo-Circassian Republics (Blinkova et al. 2004, Poelt 1985). It is newly reported for the Krasnodar Territory and the Republic of Adygeya.

Specimens examined – **1**: on *Rhizoplaca melanophthalma* (thallus), 7.viii.2014, P.M. Zhurbenko s.n. (LE 264316); **19**: on *R. chrysoleuca* (thallus), 30.viii.2014, M.P. Zhurbenko 14253 (LE 264435).

****Caloplaca grimmiae* (Nyl.) H. Olivier**

NOTES – This is an obligately lichenicolous lichen that specifically grows on species of the genus *Candelariella* (Poelt & Kalb 1985). It was previously known in the Russian Caucasus from the Kabardino-Balkarian Republic (Poelt & Kalb 1985) and is here newly reported for Krasnodar Territory.

Specimen examined – **19**: on *Candelariella vitellina* (thallus), 30.viii.2014, M.P. Zhurbenko 14162 (LE 264397).

***Carbonea vitellinaria* (Nyl.) Hertel**

NOTES – In a strict sense this species seems to be a specific parasite of *Candelariella* species (Lawrey & Diederich 2016). However, it has also been reported from species of such genera as *Lecanora*, *Lecidea*, *Rhizocarpon* and *Tephromela* (Knoph et al. 2004, Zhurbenko 2009b). It has been reported in the Russian Caucasus previously from the Karachayevo-Circassian Republic (Blinkova & Urbanavichus 2005, Zhurbenko & Kobzeva 2014) and is here newly documented for the Krasnodar Territory and the Republic of Adygeya. It is further known in Asian Russia from the Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Buryatia, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Neshataeva et al. 2006; Urbanavichene & Urbanavichus 2009; Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999).

Specimens examined (all on thalli of *Candelariella vitellina*) – **1**: 5.viii.2014, M.P. Zhurbenko 14157 (LE 264437); 7.viii.2014, M.P. Zhurbenko 14160a & P.M. Zhurbenko (LE 264277a); **19**: 30.viii.2014, M.P. Zhurbenko 14161a (LE 264377a).

***Cercidospora* cf. *macrospora* (Uloth) Hafellner & Nav.-Ros.**

CHARACTERIZATION OF MATERIAL – Ascomata 100–200 µm in diameter. Exciple in its upper part blue green inside, brown outside, colourless to pale brown towards its base. Asci 70–115 × 12–15 µm, (4–)8-spored. Ascospores narrowly clavate with the upper cell often slightly wider and sometimes shorter, occasionally narrowly ellipsoid/fusiform, (17.3–)22.1–28.1(–32.2) × (5.4–)6.1–7.5(–8.6) µm, l/b = (2.4–)3.2–4.2(–4.7) (n = 76), (0–)1-septate, sometimes slightly constricted at the septum, guttulate (Figure 3B). Conidia hyaline, bacilliform, 3.5–4.5 × 1–1.3 µm.

NOTES – So far two species of *Cercidospora* have been reported on *Rhizoplaca melanophthalma*, viz. *C. melanophthalmae* Nav.-Ros., Calat. & Hafellner, a specific parasite of this host species widely distributed in the Holarctic including the Caucasus (Calatayud et al. 2013), and *C. macrospora*, mostly associated with species of *Lecanora saxicola* group and known on *R. melanophthalma* only from a single report from Canada (Alstrup & Cole 1998). Based on Calatayud et al. (2013) *C. melanophthalmae* differs from the material we examined in its much shorter ascospores measuring (16–)18–22(–24) × (4–)5–6.5(–7) µm, and *C. macrospora* differs from our material in having an exciple that is blue-green, sometimes colourless at the base, 4(–8)-spored asci, smaller ascospores, (19–)20–25(–30) × 4–6(–7) µm, with both cells equal in shape and size and showing no preference to the host apothecia. So far *Cercidospora macrospora* has been reported in Russia only from Republic of Karelia (Alstrup et al. 2005).

Specimens examined (both on apothecial discs, rarely margins of *Rhizoplaca melanophthalma*) – **1**: 7.viii.2014, M.P. Zhurbenko 14188 (LE 264366); **19**: 30.viii.2014, M.P. Zhurbenko 14189 (LE 264336).

***Cercidospora stenotropae* Nav.-Ros. & Hafellner ad int.**

NOTES – This species was informally introduced by Calatayud et al. (2013) based on collections from Europe, North America and the Antarctic. It has yet to be formally described, but was nonetheless subsequently reported from Asia (Zhurbenko et al. 2015a) and is here reported for the first time from Russia.

Specimen examined – **1**: on *Lecanora polytropa* group (apothecia, thallus), 6.viii.2014, M.P. Zhurbenko 14187 (LE 264376).

***Cladophialophora parmeliae* (Etayo & Diederich) Diederich & Unter.**

NOTES – This lichenicolous hyphomycete was originally placed in the genus *Sclerococcum* but has recently been transferred to *Cladophialophora* based on molecular data (Diederich et al. 2013). It has been reported from scattered finds in Europe, Asia (Japan), North America (U.S.A.) and South America (Columbia, Chile) mainly from various genera of Parmeliaceae, but also from *Pannaria* and *Sticta* (Etayo 2002, Etayo & Diederich 1996, Etayo & Sancho 2008, Kocourkova & Knudsen 2009, Triebel & Scholz 2001, Zhurbenko et al. 2015a). The species is newly documented for Russia.

Specimen examined – **16**: on parmelioid lichen (thallus), 2.ix.2014, M.P. Zhurbenko 14216 (LE 309402).

***Clypeococcum cetrariae* Hafellner**

NOTES – The size of the ascospores in this species apparently vary in different collections, as they were reported to be $13\text{--}17 \times 4.5\text{--}6 \mu\text{m}$ in the protologue (Hafellner 1994a), $(12.2\text{--})13.4\text{--}15.0(\text{--}16.2) \times (5.5\text{--})5.8\text{--}7.0(\text{--}8.5) \mu\text{m}$ in Zhurbenko and Zhdanov (2013), and $(12.0\text{--})14.5\text{--}17.3(\text{--}19.6) \times (4.5\text{--})5.1\text{--}6.3(\text{--}7.7) \mu\text{m}$ in Zhurbenko and Kobzeva (2014). The species was previously known in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly reported for Krasnodar Territory of Russia. Our material is characterized by infections that produce conspicuous black spots on the host lobes, sometimes with crumbled centers, and by ascospores that are $(12.5\text{--})14.3\text{--}16.3(\text{--}17.3) \times (4.9\text{--})5.1\text{--}5.9(\text{--}6.9) \mu\text{m}$, with a length/breadth ratio of $(2.1\text{--})2.5\text{--}3.1(\text{--}3.3)$ ($n = 70$).

Specimens examined – **15**: on *Cetraria islandica* (thallus), 20.viii.2014, M.P. Zhurbenko 14178a (LE 264326); **19**: on *Flavocetraria cucullata* (thallus), 30.viii.2014, M.P. Zhurbenko 14174 (LE 264426).

***Clypeococcum cladonema* (Wedd.) D. Hawksw.**

NOTES – This species grows on *Cetrelia* and *Xanthoparmelia* species and has mainly been known from scattered finds in Europe, but also from Canary Islands, Iran and South Korea (Hafellner 1994a, 1995; Hawksworth 1977b; Joshi et al. 2015; Kocourková 2000; Santesson et al. 2004; Sohrabi & Alstrup 2007). It is here newly documented for Russia and *Flavoparmelia* is a new host genus.

Specimens examined (both on thalli of *Flavoparmelia caperata*) – **16**: 26.viii.2014, M.P. Zhurbenko 14218a (LE 309416a); **17**: 27.viii.2014, M.P. Zhurbenko 14326a (LE 309410a).

***Cornutispora lichenicola* D. Hawksw. & B. Sutton**

NOTES – This species has been reported from many distantly related lichen genera including several finds on *Parmeliopsis* (Kocourková 2000, Kukwa 2005). The species is quite common and widely distributed in both hemispheres (see for instance Brackel 2014), but still newly reported for the Caucasus here.

Specimen examined – **12**: on *Parmeliopsis ambigua* (thallus), 24.viii.2014, M.P. Zhurbenko 14190 (LE 264276).

****Diplotomma nivale* (Bagl. & Carestia) Hafellner**

NOTES – According to Lawrey and Diederich (2016) *Diplotomma nivale* is a lichenicolous lichen that grows on members of the genera *Caloplaca* and *Xanthoria* in a broad sense and eventually forms its own independent lichenized thallus. Nordin (1996) included this species within a much broader species concept of *Buellia alboatra* (Hoffm.) Th.Fr., which he treated as a widespread, morphologically highly variable lichen that was not substrate specific and grew on bark, lignum, different kinds of rock and on other lichens. The ascospores in our material are somewhat shorter and narrower than those previously reported ($(12.5\text{--})14.3\text{--}16.3(\text{--}17.3) \times (4.9\text{--})5.1\text{--}5.9(\text{--}6.9) \mu\text{m}$, $l/b = (2.1\text{--})2.5\text{--}3.1(\text{--}3.3)$ ($n = 70$) in our material vs. $(13\text{--})14.7\text{--}17.4(\text{--}20) \times (6.6\text{--})7.5\text{--}9.1(\text{--}10) \mu\text{m}$ *fide* Nordin 1996). In the specimens cited below the infections produce conspicuous black spots on the host lobes, sometimes with crumbled centers.

Specimens examined (both on thalli of *Rusavskia elegans*) – **1**: 7.viii.2014, P.M. & M.P. Zhurbenko 14201a (LE 264295); **12**: 9.viii.2014, M.P. Zhurbenko 14202 (LE 264405).

***Endococcus incrassatus* Etayo & Breuss**

NOTES – In the material that we examined for this study the ascospores were somewhat larger compared to the size range reported in the protologue $((10.7\text{--})12.6\text{--}16.2(-18.2) \times (7.0\text{--})7.9\text{--}9.1(-9.8) \mu\text{m}$, $l/b = (1.1\text{--})1.5\text{--}1.9(-2.2)$ ($n = 57$, in water or I) in our material vs. $10.5\text{--}14 \times 6\text{--}8 \mu\text{m}$ *fide* Etayo & Breuss 2001). This rarely reported species is known from a small number of collections made on *Placidiopsis cinerascens* or a sterile squamulose lichen from the U.S.A., Mexico, the Komi Republic and the Stavropol Territory of Russia (Etayo & Breuss 2001, Knudsen & Kocourkova 2008, Zhurbenko & Kobzeva 2014, Zhurbenko et al. 2012a). It is newly reported for the Krasnodar Territory of Russia here.

Specimen examined – **14:** on sterile squamulose lichen on soil, 18.viii.2014, *M.P. Zhurbenko* 14167 (LE 264466).

***Heterocephalacria physciacearum* (Diederich) Millanes & Wedin**

NOTES – This is a common lichenicolous heterobasidiomycete with subcosmopolitan distribution that grows on members of Physciaceae (Diederich 1996). It has been reported in the Caucasus from the Republic of Adygeya and the Republic of Daghestan (Urbanavichus & Ismailov 2013, Urbanavichus & Urbanavichene 2014) and is here newly reported for the Krasnodar Territory of Russia. It is further known in Asian Russia from the Sverdlovsk Region and the Magadan Region (Shiryaev et al. 2010, Zhurbenko & Zheludeva 2015).

Specimen examined – **18:** on *Physcia stellaris* (thallus), 28.viii.2014, *M.P. Zhurbenko* 14248 (LE 264305).

***Illosporopsis christiansenii* (B. L. Brady & D. Hawksw.) D. Hawksw.**

NOTES – This is a mild pathogen that mainly grows on lichens of the family Physciaceae. It is readily distinguished from the superficially similar *Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw., which also occurs on members of Physciaceae, in the formation of helicoid conidia (Diederich & Lawrey 2007). Despite being common and widespread the species is so far known in Asian Russia only from a few finds from the Caucasus (Zhurbenko & Kobzeva 2014, Zhurbenko & Otte 2012) and is here newly reported for Krasnodar Territory.

Specimens examined – **11:** on *Physcia stellaris* (thallus) and on adjacent bark of *Salix caprea*, 23.viii.2014, *P.M. & M.P. Zhurbenko* 14251 (LE 264485); **13:** on *Physcia stellaris* (thallus), 18.viii.2014, *P.M. Zhurbenko s.n.* (LE 264425); **18:** on *Physcia* sp. (thallus), 27.viii.2014, *M.P. Zhurbenko* 14243b (LE 308474b); on *Physcia stellaris* (thallus), 28.viii.2014, *M.P. Zhurbenko* 14252 (LE 264355).

***Intralichen christiansenii* (D. Hawksw.) D. Hawksw. & M.S. Cole**

NOTES – This common and widespread intrahymenial parasite was described from Greenland where it grew on *Candelariella vitellina* (Hawksworth 1979). Subsequently it was reported from many distantly related lichen genera (see for instance Brackel 2014) including a single report from *Rusavskia elegans* (Alstrup et al. 2000). The species was reported in the Caucasus from the Republic of Daghestan and the Stavropol Territory (Urbanavichus et al. 2010, Zhurbenko & Kobzeva 2014) and is here newly documented for the Krasnodar Territory. It is further known in Asian Russia from the Krasnoyarsk Territory, Republic of Sakha (Yakutia), Chukotka Autonomous Area and Jewish Autonomous Region (Zhurbenko 2009a, 2014; Zhurbenko & Hafellner 1999).

Specimen examined – **19:** on *Rusavskia elegans* (apothecia, thallus), 28.viii.2014, *P.M. Zhurbenko & A.A. Kobzeva* 1475b (LE 264455b).

***Intralichen lichenum* (Diederich) D. Hawksw. & M.S. Cole**

NOTES – This species was described from *Opegrapha atra* (Diederich 1990) and later reported from various distantly related genera of lichens including a single report on *Cladonia* (Brackel 2010, 2014) and from the lichenicolous heterobasidiomycete *Tremella ramalinae* (Brackel 2011). Although the species is quite common and widespread it is here newly reported for Russia.

Specimen examined. – **3:** on *Cladonia pyxidata* (galls on podetia induced by an unidentified heterobasidiomycete), 9.viii.2014, *M.P. Zhurbenko* 14279c (LE 308610c).

***Lichenochora weillii* (Werner) Hafellner & R. Sant.**

NOTES – This is a widely distributed parasite mainly or possibly exclusively confined to species of *Physconia* (Brackel 2014, Lawrey & Diederich 2016). It has previously been known in the Caucasus from a

single report from the Republic of Adygeya (Urbanavichus & Urbanavichene 2014) and is further known in Asian Russia only from the Krasnoyarsk Territory (Zhurbenko 2009b).

Specimen examined. – **1:** on *Physconia muscigena* (thallus), 5.viii.2014, M. P. Zhurbenko 14195a (LE 264256a).

***Lichenosconium aeruginosum* Diederich, M. Brand, van den Boom & Lawrey**

NOTES – This species was reported only from the lichen genus *Cladonia* and is remarkable because of its K+ aeruginose pycnidial wall. It was formerly known from Luxembourg, France, the Netherlands and Turkey (Kocakaya et al. 2016, Lawrey et al. 2011) and is here reported new to Russia. In the specimen cited below the fungus caused discoloration of the host thallus, and the conidia were very close to the size given in the protologue ((3.3–)3.7–4.5(–5.7) × (3.1–)3.3–3.9(–4.3) μm, l/b = (1.0–)1.1–1.3(–1.5) (n = 34) in our material vs. (3.4–)3.8–4.6(–5.4) × (3.0–)3.4–3.8(–4.3) μm *fide* Lawrey et al. 2011).

Specimen examined. – **13:** on *Cladonia pyxidata* (podetia), 23.viii.2014, M.P. Zhurbenko 144 (LE 308484).

***Lichenosconium cargillianum* (Linds.) D. Hawksw.**

NOTES – This lichenicolous coelomycete can be recognized by its comparatively large pycnidia (up to 200 μm in diameter) and large, coarsely verrucose conidia measuring 5–7(–7.5) × 3.5–5(–6) μm (Hawksworth 1977a). It is known from scattered finds in Europe, North America (Mexico, U.S.A.), South America (Bolivia, Chile) and New Zealand mainly growing on members of Parmeliaceae (Alstrup & Ahti 2007, Brackel 2011, Cole & Hawksworth 2004, Diederich 2003, Etayo & Diederich 1996, Etayo & Sancho 2008, Flakus & Kukwa 2012, Hafellner & Mayrhofer 2007, Hawksworth 1981). The species is newly reported for Russia here and *Cetrelia* is a new host genus.

Specimen examined – **4:** on *Cetrelia cetrarioides* (thallus), 10.viii.2014, M.P. Zhurbenko 14211a (LE 309393).

***Lichenosconium erodens* M.S. Christ. & D. Hawksw.**

NOTES – This is a common and widespread pathogen of many distantly related genera of lichens and lichenicolous fungi, although it appears that this may be the first report from *Cetrelia* (see for instance Brackel 2014). So far it is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Republic of Sakha (Yakutia), Khabarovsk Territory and Kamchatka Territory (Zhurbenko 2009b, Zhurbenko & Kobzeva 2014, Zhurbenko & Tugi 2013, Zhurbenko & Vershinina 2014, Zhurbenko et al. 2012b).

Specimens examined. – **5:** on *Flavoparmelia caperata* (thallus, including soralia), 12.viii.2014, M.P. Zhurbenko 14319b (LE 309391b); **6:** on *Cetrelia olivetorum* (thallus), 14.viii.2014, M.P. Zhurbenko 14196 (LE 264386); **12:** on *Parmeliopsis ambigua* (thallus), 24.viii.2014, M.P. Zhurbenko 14192 (LE 264266).

***Lichenosconium lecanorae* (Jaap) D. Hawksw.**

NOTES – This is a common and widespread pathogen that occurs on a wide range of hosts (see for example Brackel 2014). It is very similar to *Lichenosconium usneae* (Anzi) D. Hawksw., differing mainly in having slightly shorter conidiogenous cells ((4–)5–7(–8) μm in *L. lecanorae* vs. (5–)7–9(–11) μm in *L. usneae* *fide* Hawksworth 1977a). The species is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Trans-Baikal Territory, Republic of Sakha (Yakutia), Khabarovsk Territory, Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999; Zhurbenko & Kobzeva 2014; Zhurbenko & Santesson 1996; Zhurbenko & Tugi 2013; Zhurbenko & Yakovchenko 2014; Zhurbenko et al. 2012b) and is newly documented for the Krasnodar Territory here.

Specimens examined (all except LE 264297 on apothecial discs of *Rhizoplaca chrysoleuca*). – **3:** 9.viii.2014, M.P. Zhurbenko 14194 (LE 264356); **11:** on *Evernia prunastri* (thallus), 15.viii.2014, M.P. Zhurbenko 14172 (LE 264297); **19:** 28.viii.2014, P.M. Zhurbenko s.n. (LE 264306a); 30.viii.2014, M.P. Zhurbenko 14193 (LE 264296).

***Lichenosconium usneae* (Anzi) D. Hawksw.**

NOTES – This is a pathogenic species that has been reported from many different lichen genera (see for instance Brackel 2014), but only once on *Tuckermannopsis* (Himelbrant et al. 2013). It is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Trans-Baikal Territory, Republic of Sakha

(Yakutia), Jewish Autonomous Region, Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2009b, 2012, 2014; Zhurbenko & Kobzeva 2014; Zhurbenko & Vershinina 2014; Zhurbenko & Yakovchenko 2014; Zhurbenko et al. 2012b) and is here newly documented for Krasnodar Territory.

Specimens examined – **10:** on *Physcia stellaris* (apothecia, thallus), 16.viii.2014, *M.M. Semichaevskaya s.n.* (LE 264395); **13:** on *Tuckermannopsis sepincola* (thallus), 18.viii.2014, *P.M. Zhurbenko s.n.* (LE 264406b); **18:** on *Physcia stellaris* (apothecia, thallus), 28.viii.2014, *M.P. Zhurbenko 14249* (LE 264285).

***Lichenopeltella cladoniarum* E.S. Hansen & Alstrup**

NOTES – This rarely reported cladoniicolous fungus was formerly known from the U.S.A. (Alaska), Denmark (Greenland), Iceland, Sweden, Norway and the Nenets Autonomous Area of Russia (Hansen & Alstrup 1995, Santesson et al. 2004, Spribille et al. 2010, Zhurbenko 2008). It is here newly reported for Asia and for anywhere outside of the arcto-boreal regions.

Specimens examined – **19:** on *Cladonia rangiferina* (podetia), 28.viii.2014, *P.M. Zhurbenko s.n.* (LE 308486); on *C. arbuscula* ssp. *arbuscula* (podetia), 30.viii.2014, *M.P. Zhurbenko 142* (LE 308485); on *C. arbuscula* ssp. *mitis* (podetia), 31.viii.2014, *M.P. Zhurbenko 143* (LE 308487).

***Lichenopeltella cetrariicola* (Nyl.) R. Sant.**

NOTES – The species is confined to cetrarioid lichens and is known from Europe, Asia (Irkutsk Region and Buryatiya Republic of Russia), North America (Greenland) and South America (Chile) (Alstrup et al. 2009, Berger 2000, Etayo 2010b, Etayo & Sancho 2008, Hawksworth 1980a, Santesson et al. 2004, Zhurbenko & Vershinina 2014). It is here newly reported for the Caucasus.

Specimen examined – **15:** on *Cetraria islandica* (thallus), 20.viii.2014, *M.P. Zhurbenko 14178c* (LE 264497).

***Lichenostigma alpinum* (R.Sant., Alstrup & D.Hawksw.) Ertz & Diederich**

NOTES – The species is most common in the Arctic, where it mainly grows on species of *Ochrolechia* and *Pertusaria*. Nonetheless it is also known from many extra-Arctic regions, for instance from Chile (Tierra del Fuego), the U.S.A. (Georgia) and Bolivia (Diederich 2003, Etayo & Sancho 2008, Flakus & Kukwa 2012). It has been previously reported in Asian Russia from the Caucasus, Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Buryatia, Republic of Sakha (Yakutia), Jewish Autonomous Region, Kamchatka Territory and Chukotka Autonomous Area (Urbanavichene & Urbanavichus 2009; Zhurbenko 2008, 2009a, b, 2014; Zhurbenko & Hafellner 1999; Zhurbenko & Kobzeva 2014; Zhurbenko & Santesson 1996; Zhurbenko & Zhdanov 2013; Zhurbenko et al. 2012b) and is here newly documented for Krasnodar Territory.

Specimen examined – **19:** on *Ochrolechia* cf. *inaequatula* (thallus), 31.viii.2014, *M.P. Zhurbenko 14158* (LE 264317).

***Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw.**

NOTES – This is a common sclerotial homobasidiomycete that produces pinkish or reddish bulbils (Diederich & Lawrey 2007). It was reported from many different host genera including single find on *Parmeliopsis* (Diederich & Lawrey 2007, Etayo & Diederich 1996). The species is known in Asian Russia from the Caucasus, Republic of Buryatia and Jewish Autonomous Region (Zhurbenko 2008, 2014; Zhurbenko & Kobzeva 2014).

Specimens examined – **5:** on *Ramalina* sp. (thallus), 12.viii.2014, *M.P. Zhurbenko 14198* (LE 264365); **10:** on *Vulpicida pinastri* (thallus), 16.viii.2014, *M.P. Zhurbenko 14181* (LE 264456); **12:** on *Parmeliopsis ambigua* (thallus), 24.viii.2014, *M.P. Zhurbenko 14191* (LE 264286).

***Muellerella erratica* (A. Massal.) Hafellner & V. John**

NOTES – This common and widespread species has been reported from many different host genera including a few reports on *Rusavskia elegans* (Triebel 2006, Zhurbenko 2009b). Taxonomic differences of *Muellerella* species growing on *Xanthoria* s.l. require additional study (Zhurbenko 2009b), and our material has ascospores that measure $(6.0\text{--}6.8\text{--}8.2\text{--}9.3) \times (2.8\text{--}3.4\text{--}4.4\text{--}5.4) \mu\text{m}$, with a length/breadth ratio of $(1.3\text{--}1.7\text{--}2.3\text{--}2.7)$ ($n = 54$).

Specimens examined (both on apothecia and thalli of *Rusavskia elegans*) – **14:** 18.viii.2014, *M.P. Zhurbenko 14213* (LE 264325); **19:** 30.viii.2014, *M.P. Zhurbenko 14203* (LE 264495).

***Muellerella hospitans* Stizenb.**

NOTES – This species is almost exclusively known from the Northern Hemisphere, where it typically grows on *Bacidia fraxinea* and *B. rubella*, except one report on *Endocarpon* sp. from Peru that might be erroneous (Etayo 2010a). It has been reported in Asian Russia from the Caucasus and Krasnoyarsk Territory (Urbanavichus & Urbanavichene 2015a, Zhurbenko & Kobzeva 2014, Zhurbenko & Santesson 1996).

Specimen examined – **20:** on *Bacidia rubella* (apothecia: discs), 10.ix.2014, *M.P. Zhurbenko* 14164b (LE 264327b).

Muellerella pygmaea* (Körb.) D. Hawksw. var. *pygmaea

NOTES – This widely distributed and common taxon grows on many different saxicolous lichens including species of *Rhizocarpon* (Hafellner 2000). So far it has been reported in the Russian Caucasus only from the Republic of Daghestan (Urbanavichus et al. 2011) and is here newly documented for the Republic of Adygeya.

Specimen examined – **1:** on *Rhizocarpon* sp. (thallus), 7.viii.2014, *P.M. Zhurbenko s.n.* (LE 264396).

***Muellerella ventosicola* (Mudd) D. Hawksw.**

NOTES – This is a widespread parasite on many different saxicolous lichens with numerous records from species of *Ophioparma* and *Rhizocarpon* (Triebel 1989). It has been reported in Asian Russia from the Karachayevo-Circassian Republic, Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Altai Territory, Trans-Baikal Territory, Republic of Sakha (Yakutia) and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Davydov 2000; Zhurbenko & Kobzeva 2014; Zhurbenko & Yakovchenko 2014) and is here newly documented for the Republic of Adygeya.

Specimens examined – **1:** on *Ophioparma ventosa* (thallus), 5.viii.2014, *M.P. Zhurbenko* 14150a (LE 264387); on *Rhizocarpon* sp. (thallus), 5.viii.2014, *M.P. Zhurbenko* 14185 (LE 264416); on *Rhizocarpon* sp. (thallus), 6.viii.2014, *M.P. Zhurbenko* 14186 (LE 264346).

***Niesslia cladoniicola* D. Hawksw. & W. Gams**

NOTES – This infrequently reported, but apparently widely distributed, cladoniicolous fungus (see for instance Brackel 2014) was known in Asian Russia only from the Krasnoyarsk Territory (Alstrup 2004, Zhurbenko & Alstrup 2004). It is newly reported here for the Caucasus and from *Cladonia chlorophaea* s.l. and *C. coniocraea*.

Specimens examined – **6:** on *Cladonia coniocraea* (moribund basal squamules and podetia), 13.viii.2014, *M.P. Zhurbenko* 14289 (LE 308622); **13:** on *C. chlorophaea* s.l. (moribund podetia), 23.viii.2014, *M.P. Zhurbenko* 14288 (LE 308621).

***Phaeopyxis punctum* (A. Massal.) Rambold, Triebel & Coppins**

NOTE – This is a common lichenicolous fungus with subcosmopolitan distribution that is confined to species of *Cladonia* (see for instance Brackel 2014). Nonetheless it is newly reported for the Caucasus here.

Specimen examined – **12:** on *Cladonia cenotea* (upper surface of basal squamules), 24.viii.2014, *M.P. Zhurbenko* 145 (LE 308489).

***Phoma epiphyscia* Vouaux**

NOTES – This lichenicolous coelomycete was neotypified by Alstrup and Hawksworth (1990) on a specimen that grew on *Phaeophyscia sciastra*, but unfortunately those authors did not include a detailed description. It has also been reported on other lichen genera such as *Anaptychia*, *Physcia*, *Physconia* and *Xanthoria* (Brackel 2011, Etayo 2010b, Zhurbenko 2009b, Zhurbenko & Kobzeva 2014). The species was formerly known in the Caucasus only from an uncertain report on *Anaptychia* from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly documented for Krasnodar Territory of Russia. The specimen cited below is characterized by having conidiomata about 125 µm in diameter that protrude in the upper part, conidiogenous cells that are ampulliform and (4.9–)5.1–7.1(–8.4) × (4.2–)4.3–5.3(–5.6) µm (n = 14), and conidia that are oblong to ellipsoid, usually with a small guttule near each end, (4.5–)5.2–6.6(–7.2) × (2.1–)2.2–2.4(–2.5) µm, and have a length/breadth ratio of (1.9–)2.2–2.8(–3.3) (n = 33).

Specimen examined – 19: on *Physcia caesia* (thallus), 28.viii.2014, P.M. Zhurbenko s.n. (LE 264335b).

***Phoma physciicola* Keissl.**

NOTES – Following Diederich (2004) conidia of this coelomycete can be somewhat narrower than those of the specimen cited below (oblong, occasionally broadly ellipsoid to subglobose, $(3.6\text{--})4.6\text{--}5.8(6.1) \times (3.0\text{--})3.3\text{--}3.9(4.2) \mu\text{m}$, $l/b = (1.0\text{--})1.2\text{--}1.6(1.8)$ ($n = 19$) in our material vs. $4\text{--}5.5(6) \times 2.5\text{--}3.5(4) \mu\text{m}$ *fide* Diederich 2004). It mainly grows on the apothecia of *Physcia* and *Physconia* species (see for instance Brackel 2014), but has also been reported from thalli of *Anaptychia bryorum* (Zhurbenko 2009b). The species was previously reported in Russia from the Republic of Adygeya, Komi Republic, Krasnoyarsk Territory, Khabarovsk Territory and Chukotka Autonomous Area (Urbanavichus & Urbanavichene 2014, Zhurbenko 2009b, Zhurbenko & Tugi 2013, Zhurbenko et al. 2012a) and is here newly documented for Krasnodar Territory.

Specimen examined – 18: on *Anaptychia ciliaris* (thallus), 29.viii.2014, M.P. Zhurbenko 14180 (LE 264496).

***Polycoccum pulvinatum* (Eitner) R. Sant.**

NOTES – This is a common and widespread gall-inducing lichenicolous fungus that occurs on species of *Physcia* (see for instance Brackel 2014). It has previously been reported in Asian Russia from the Karachayevo-Circassian Republic, Stavropol Territory, Yamal-Nenets Autonomous Area, Trans-Baikal Territory, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2009b, Zhurbenko & Kobzeva 2014, Zhurbenko & Yakovchenko 2014, Zhurbenko et al. 2012b) and is here newly reported for Republic of Adygeya.

Specimen examined – 9: on *Physcia aipolia* (thallus), 19.ix.2014, A.A. Kobzeva 142 (LE 264375).

***Pyrenidium actinellum* Nyl. s.l.**

NOTES – This species is characterized by the presence of aeruginose colouring in the ostiolar region of its ascomata (Hafellner & Mayrhofer 2007). It was described from *Scytinium teretiusculum* (Hawksworth 1983) and later reported from a wide range of distantly related host genera including *Solorina* (see for instance Etayo 2010a, Hafellner & Mayrhofer 2007, Hawksworth 1980b). Here it is newly reported on *Megaspora*. Navarro-Rosinés and Roux (2007) suggested that *Pyrenidium actinellum* in the broad sense used here constitutes a group of species, but its taxonomy has not yet been revised.

Specimens examined – 1: on *Solorina crocea* (thallus), 4.viii.2014, M.P. Zhurbenko 14148b (LE 264367b); on *Megaspora verrucosa* (thallus), 5.viii.2014, M.P. Zhurbenko 14156a (LE 264307).

***Pyrenochaeta cf. xanthoriae* Diederich**

NOTES – Conidiophores up to $35 \mu\text{m}$ long and $2.0\text{--}2.8 \mu\text{m}$ wide. Conidia $(3.1\text{--})3.9\text{--}4.7(5.3) \times (2.1\text{--})2.3\text{--}2.7(2.9) \mu\text{m}$, $l/b = 1.2\text{--}1.6\text{--}2.0(2.4)$ ($n = 52$). In the protologue of this species the conidiophores and conidia are smaller than those of the specimen we examined, viz. conidiophores $4\text{--}18 \times 1\text{--}1.8 \mu\text{m}$, conidia $3\text{--}3.5(4) \times 1.4\text{--}1.8(2) \mu\text{m}$ (Diederich 1990). The species was described and almost exclusively reported from *Xanthoria parietina* (see for instance Brackel 2011, Diederich & Sérusiaux 2000, Etayo 2010b), but not previously from *Rusavskia elegans*. So far it has been reported in Russia (without expressed doubt) only from the Republic of Karelia and the Stavropol Territory (Alstrup et al. 2005, Zhurbenko & Kobzeva 2014).

Specimen examined – 15: on *Rusavskia elegans* (thallus), 22.viii.2014, M.P. Zhurbenko 14214 (LE 308476).

***Raesaenenia huuskonenii* (Räsänen) D. Hawksw., Boluda & H. Lindgr.**

NOTES – This species is known from the Northern Hemisphere, being most common in boreal forests, but also occurring in the Arctic (Alstrup et al. 2009, Zhurbenko 2009a) and southwards to the Canary Islands (Hawksworth 1982). It has been reported in Asian Russia from the Caucasus, Krasnoyarsk Territory, Irkutsk Region, Republic of Buryatia, Trans-Baikal Territory, Republic of Sakha (Yakutia) and Kamchatka Territory (Urbanavichene & Urbanavichus 2009, Zhurbenko 2009a, Zhurbenko & Kobzeva 2014, Zhurbenko & Vershinina 2014, Zhurbenko & Yakovchenko 2014, Zhurbenko & Zhdanov 2013, Zhurbenko et al. 2012b).

Specimens examined (all on thalli of *Bryoria fuscescens*) – **10**: 16.viii.2014, *M.P. Zhurbenko* 14169 (LE 264477); **18**: 27.viii.2014, *M.P. Zhurbenko* 14168 (LE 264457); 29.viii.2014, *M.P. Zhurbenko* 14170 (LE 264287).

***Roselliniella cladoniae* (Anzi) Matzer & Hafellner**

NOTE – This common cladoniicolous fungus with a subcosmopolitan distribution (see for instance Aptroot et al. 1997, Etayo & Sancho 2008, Matzer & Hafellner 1990, Spribille et al. 2010) is here newly reported for the Caucasus.

Specimens examined – **8**: on *Cladonia coniocraea* (basal squamules, occasionally podetia), 13.viii.2014, *A.A. Kobzeva* 1478 (LE 308623); **12**: on *C. pyxidata* (underside of basal squamules), 9.viii.2014, *M.P. Zhurbenko* 14290 (LE 308624).

***Sclerococcum serusiauxii* Boqueras & Diederich**

NOTES – This species was described from Spain and subsequently also reported from Portugal, Italy, France (Corsica), Slovenia and Poland where it was found growing on species of *Parmelina* (Boqueras & Diederich 1993, Brackel 2011, Hafellner 1994b, Kukwa et al. 2013, Suppan et al. 2000, van den Boom & Giralt 1999). It is here newly documented to Russia and Asia.

Specimens examined – **18**: on *Parmelina quercina* (apothecia, thallus), 28.viii.2014, *M.P. Zhurbenko* 14330a (LE 309419a); **21**: on *P. tiliaceae* (thallus), 6.ix.2014, *M.P. Zhurbenko* 14220 (LE 309420).

***Sphaerellothecium abditum* Triebel**

NOTES – This species grows strictly within the epinecral layer of thalli of saxicolous crustose lichens, mainly of *Lecidea* s.l., and is known from sporadic finds in Europe, Asia and North America (Triebel 1989, Triebel et al. 1991). It was previously reported from Russia only from the Chukotka Autonomous Area (Karatygin et al. 1999) and is here newly documented for the Caucasus.

Specimen examined – **1**: on *Lecidea atrobrunnea* (epinecral layer of areoles), 7.viii.2014, *M.P. Zhurbenko* 14160b & *P.M. Zhurbenko* (LE 264277b).

***Sporidesmiella physconiicola* Zhurb., U.Braun & Kobzeva**

NOTES – This recently described hyphomycete can be recognized by the production of a phialidic synanamorph with densely branched, metula-like heads on the apices of conidiophores (Zhurbenko et al. 2015b). Previously it was known only from two collections on *Physconia distorta* from the Karachayevo-Circassian Republic and Krasnodar Territory in the Caucasus (Zhurbenko et al. 2015b) and is here newly reported for the Republic of Adygeya of Russia.

Specimen examined – **11**: on *Physconia distorta* (apothecial discs and margins, thallus), 12.viii.2014, *M.P. Zhurbenko* 14246 (LE 264475).

***Stigmidium frigidum* (Th.Fr. ex Sacc.) Alstrup & D. Hawksw.**

NOTES – This lichenicolous fungus is confined to species of *Thamnolia* and can be confused with *Sphaerellothecium thamnoliae* Zhurb., from which it differs in its usually immersed and inconspicuous vegetative hyphae, aggregated ascomata, constantly 1-septate, non-halonate ascospores and malformations that it induces on the host thalli under heavy infections (Zhurbenko 2012). It has been mostly reported from arctic or alpine habitats in Europe, Asia and North America, but is also known from the Southern Hemisphere (New Zealand and Peru) (Etayo 2010a, Hafellner & Mayrhofer 2007, Hafellner & Türk 1995, Kukwa & Flakus 2009, Santesson et al. 2004, Zhurbenko 2012). The species was previously reported in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly documented for the Republic of Adygeya and the Krasnodar Territory of Russia.

Specimens examined (both on thalli of *Thamnolia vermicularis* var. *subuliformis*) – **1**: 6.viii.2014, *M.P. Zhurbenko* 14151 (LE 264257); **15**: 20.viii.2014, *M.P. Zhurbenko* 14155 (LE 264337).

***Stigmidium hafellneri* Zhurb.**

NOTES – Ascomata about 50–70 µm diam. Interascal gel I–, K/I–. Ascospores on average slightly longer than indicated in the species protologue (Zhurbenko 2009a), viz. (7.2–)8.1–10.1(–11.7) × (2.8–)3.2–4.0(–4.7) µm, l/b = (1.8–)2.2–2.8(–4.0) (n = 89, in water, K or K/I) in our material vs. (7–)7.5–8.5(–11) × (2.5–)3–3.5(–4.5) µm. Infections cause strong bleaching of the host lobes. The species is

remarkable for its permanently coloured mature ascospores, which is an unusual character in the genus (Zhurbenko 2009a). It was previously known from scattered occurrences on *Cetraria islandica* and *Flavocetraria cucullata* in Europe (Estonia) and Asian Russia (Republic of Buryatia, Republic of Sakha (Yakutia) and Magadan Region) (Suija et al. 2015, Zhurbenko 2009a) and is here newly reported for the Caucasus.

Specimen examined – **15**: on *Cetraria islandica* (thallus), 20.viii.2014, M.P. Zhurbenko 14178b (LE 264467).

***Stigmatidium pumilum* (Lettau) Matzer & Hafellner**

NOTES – This is a common parasite with a subcosmopolitan distribution that grows on members of the Physciaceae (see for instance Brackel 2014). Apart from the Caucasus it has previously been reported in Asian Russia from the Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2002, 2009b; Zhurbenko & Kobzeva 2014; Zhurbenko et al. 2012b).

Specimens examined – **19**: on *Physcia caesia* (thallus), 28.viii.2014, P.M. Zhurbenko s.n. (LE 264335a); on *P. caesia* (thallus), 28.viii.2014, A.A. Kobzeva 143 (LE 264465); on *P. caesia* (thallus), 30.viii.2014, M.P. Zhurbenko 14271 (LE 264445); on *P. phaea* (thallus), 30.viii.2014, M.P. Zhurbenko 14247 (LE 309368).

***Stigmatidium solorinarium* (Vain.) D. Hawksw.**

NOTE – While this species is known from many reports on *Solorina* from Europe, Asia and North America (see for instance Brackel 2014, Hawksworth 1986, Zhurbenko 2009b) it is here newly reported from the Caucasus.

Specimen examined – **12**: on *Solorina* sp. (thallus), 9.viii.2014, M.P. Zhurbenko 14146 (LE 264487).

****Tetramelas pulverulentus* (Anzi) A. Nordin & Tibell**

NOTES – This endokapylic lichen seems to be most common in the Arctic, where it mainly grows on *Physconia muscigena* (Zhurbenko 2008, 2009b), but is also known from many other regions of Europe, Asia, North America and South America (Nordin 2000). It has previously been reported in the Caucasus from the Karachayevo-Circassian Republic and the Republic of Adygeya (Blinkova et al. 2004, Urbanavichus & Urbanavichene 2014).

Specimens examined – **1**: on *Physconia muscigena* (thallus), 5.viii.2014, M.P. Zhurbenko 14195b (LE 264256b); **4**: on *P. distorta* (thallus), 10.viii.2014, M.P. Zhurbenko 14262b (LE 264415b).

***Thamnogalla crombiei* (Mudd) D. Hawksw.**

NOTES – This is a conspicuous gall-inducing lichenicolous fungus that occurs on species of the arcto-alpine genus *Thamnolia* seemingly distributed throughout the subcosmopolitan range of the host (Etayo & Sancho 2008, Flakus & Kukwa 2012, Hafellner & Mayrhofer 2007, Hoffmann & Hafellner 2000, Santesson et al. 2004, Zhurbenko 2012). It was previously known in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly reported from Republic of Adygeya.

Specimens examined (both on thalli of *Thamnolia vermicularis* var. *subuliformis*) – **1**: 6.viii.2014, M.P. Zhurbenko 14152 (LE 264417); 7.viii.2014, M.P. Zhurbenko 14153 & P.M. Zhurbenko (LE 264447).

***Xenonectriella* cf. *leptaleae* (J. Steiner) Rossman & Lowen**

NOTES – The examined specimens are conspecific with those also reported as *Xenonectriella* cf. *leptaleae* from the Caucasus by Zhurbenko and Otte (2012) and Zhurbenko and Kobzeva (2014), but differ from the species description in Rossman et al. (1999), where it is said that the ascospores are smaller (8–12 × 6.5–8 µm) and the exciple turns yellow in lactic acid. In the specimens cited below the ascomata are subglobose to pyriform, papillate, usually protruding only in ostiolar area, dark red to almost blackish in exposed parts, and 200–300 µm in diameter. The ascomatal walls are orange, not changing color in K or lactic acid. The ascospores are oblong to ellipsoid with rounded ends, occasionally subglobose or obovate, first hyaline and smooth then light to moderate orange and prominently tuberculate, (9.9–)10.8–14.0(–17.9) × (6.5–)7.2–8.4(–9.0) µm in size, with a length/breadth ratio of 1.3–1.9(–2.7) (n = 55), (0–)1-septate, sometimes constricted at the septum, mostly with one large guttule in each cell, and uniseriate in the ascus.

Specimens examined – **4:** on *Physconia distorta* (decaying apothecia, thallus), 10.viii.2014, M.P. Zhurbenko 14262c (LE 264415c); on neighbouring *Physcia aipolia* and *Physconia distorta* (bleached thalli), 10.viii.2014, M.P. Zhurbenko 14244 (LE 308472); **11:** on *Physconia distorta* (decaying apothecia, thallus), 12.viii.2014, M.P. Zhurbenko 14245b (LE 264345b); **13:** on *Physcia stellaris* (bleached thallus), 18.viii.2014, P.M. Zhurbenko s.n. (LE 308473).

***Zwackhiomyces berengerianus* (Arnold) Grube & Triebel**

NOTES – This species is known from scattered reports on species of *Bacidia*, *Bilimbia* and *Mycobilimbia* from Europe, Asia and North America (see for instance Grube & Hafellner 1990, Kukwa & Flakus 2009, Zhurbenko 2013, Zhurbenko & Brackel 2013, Zhurbenko & Santesson 1996, Zhurbenko et al. 1995). It is newly reported for the Caucasus here.

Specimen examined – **20:** on *Bacidia rubella* (thallus), 10.ix.2014, M.P. Zhurbenko 14164a (LE 264327a).

***Zwackhiomyces coepulonus* (Norman) Grube & R. Sant.**

NOTES – The size of the ascospores of this species published by different authors vary considerably; for instance, according to Grube and Hafellner (1990) they are $(15-16-20(-21) \times 5.5-8.5(-9) \mu\text{m}$, and according to Zhurbenko (2009b) they are $(15-18.5-23(-25) \times (5.5-6-7(-8) \mu\text{m}$. In our material the ascospores measure $(15.6-17.2-21.6(-24.0) \times (5.8-6.8-8.0(-8.2) \mu\text{m}$ and have a length/breadth ratio of $(2.1-2.3-2.9(-3.3)$ ($n = 26$). The species is known from the Northern Hemisphere from members of the genera *Caloplaca* and *Xanthoria* in a broad sense (see for instance Brackel 2014). It was formerly known in Russia from the Republic of Adygeya, Nenets Autonomous Area and Krasnoyarsk Territory (Urbanavichus & Urbanavichene 2014, Zhurbenko 2009b).

Specimen examined – **12:** on *Rusavskia elegans* (thallus), 5.viii.2014, A.A. Kobzeva (LE 264315).

***Zwackhiomyces echinulatus* Brackel**

NOTES – This species was recently described from Sicily where it grew on *Physconia distorta* (Brackel 2008). Later it was found in Russia in the Tula Region, Tver Region and Karachayevo-Circassian Republic (Zhurbenko & Gudovicheva 2013, Zhurbenko & Kobzeva 2014, Zhurbenko & Notov 2015) and is here newly reported for the Republic of Adygeya.

Specimen examined – **11:** on *Physconia distorta* (partly damaged apothecia and thallus), 12.viii.2014, M.P. Zhurbenko 14250 (LE 264265).

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Lichens, lichenicolous fungi, and allied fungi of Pipestone National Monument, Minnesota, U.S.A., revisited

M.K. ADVAITA, CALEB A. MORSE^{1,2} AND DOUGLAS LADD³

ABSTRACT. – A total of 154 lichens, four lichenicolous fungi, and one allied fungus were collected by the authors from 2004 to 2015 from Pipestone National Monument (PNM), in Pipestone County, on the Prairie Coteau of southwestern Minnesota. Twelve additional species collected by previous researchers, but not found by the authors, bring the total number of taxa known for PNM to 171. This represents a substantial increase over previous reports for PNM, likely due to increased intensity of field work, and also to the marked expansion of corticolous and anthropogenic substrates since the site was first surveyed in 1899. Reexamination of 116 vouchers deposited in MIN and the PNM herbarium led to the exclusion of 48 species previously reported from the site. Crustose lichens are the most common growth form, comprising 65% of the lichen diversity. Sioux Quartzite provided substrate for 43% of the lichen taxa collected. Saxicolous lichen communities were characterized by sampling four transects on cliff faces and low outcrops. An annotated checklist of the lichens of the site is provided, as well as a list of excluded taxa. We report 24 species (including 22 lichens and two lichenicolous fungi) new for Minnesota: *Acarospora boulderensis*, *A. contigua*, *A. erythrophora*, *A. strigata*, *Agonimia opuntiella*, *Arthonia clemens*, *A. muscigena*, *Aspicilia americana*, *Bacidina delicata*, *Buellia tyrolensis*, *Caloplaca flavocitrina*, *C. lobulata*, *C. soralifera*, *Candelariella antennaria*, *Dermatocarpon arenosaxi*, *Diplotomma subdispersa*, *Endocarpon pallidulum*, *Enterographa osagensis*, *Pseudosagedia chlorotica*, *Psoroglaena dictyospora*, *Punctelia missouriensis*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. sphaerospora*. In addition, we report *Acarospora erythrophora* new for Kansas and Oklahoma, *Enterographa osagensis* new for Nebraska and South Dakota, and *Pseudosagedia chlorotica* new for Oklahoma.

KEYWORDS. – Great Plains, floristic change, lichen community structure, Northern Glaciated Plains Ecoregion.

INTRODUCTION

Pipestone National Monument (PNM) encompasses 122 hectares (301 acres) in the Northern Glaciated Plains Ecoregion (Omernik & Griffith 2008), on the Prairie Coteau of southwestern Minnesota. Designated a national monument in 1937, PNM is located in Pipestone County, at the northwest edge of the town of Pipestone (44.041°N, 96.325°W; figure 1). Between 1975–2015, annual temperatures at PNM averaged 6.5°C (43.7°F), with mean monthly temperatures ranging from –11.1°C (12.1°F) in January to 21.8°C (71.3°F) in July. Average annual precipitation was 67.8 cm (26.7 inches), with most precipitation occurring between April and September (NOAA 2016). Between 1956–1970, average annual growing season open pan evaporation in the region was approximately 106.7 cm (42.0 inches) (Farnsworth et al. 1982), resulting in a negative net evaporation value (open pan evaporation minus annual precipitation) of approximately 38.9 cm (15.3 inches) and a precipitation to evaporation ratio of 0.63, within the 0.3–1.0 range typically attributed to temperate grasslands (Transeau 1905).

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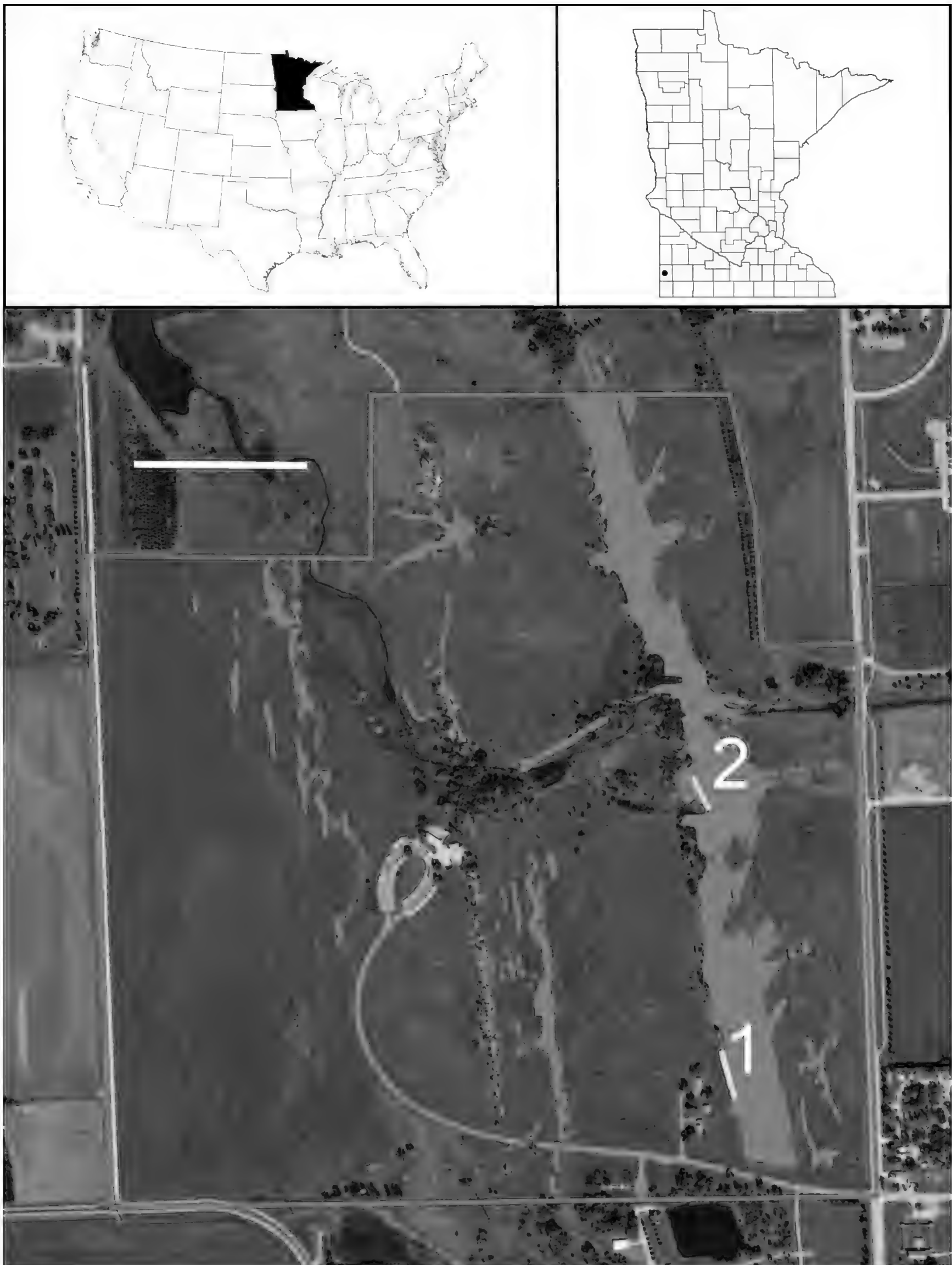


Figure 1. Location of Pipestone National Monument, Pipestone Co., Minnesota (top right and left). Map of the the study area (bottom) with Sioux Quartzite outcrops indicated in orange, and sampling transects indicated in blue (1, Flats transect, 2, Upper Cliff, Mid-Cliff, and Lower Cliff transects; scale = 250 m).

The site is geologically and historically significant for its numerous high-quality pipestone (catlinite) quarries, which were developed and continuously worked by Native Americans from about 1200 CE (Corbett 1980) to the present day. Catlinite is a red metamorphic claystone that can be hand-carved into ceremonial pipes. This soft claystone is sandwiched between thicker layers of Precambrian Sioux Quartzite bedrock (Southwick et al. 1986). In addition to the subsurface quarries, three parallel north–south ridges of Sioux Quartzite form flat, low outcrops and a low line of cliffs at PNM (figure 2). The sheer red cliffs have a western exposure and rise up to five meters. A massive, abandoned sandstone railroad trestle stands over an ephemeral wetland toward the eastern boundary of the monument.

Historically, the vegetation of PNM would have been dominated by tallgrass prairie, with rare woody vegetation restricted to sheltered sites and stream courses. During his 1835 expedition to the site, the painter George Catlin noted of the surrounding prairie that for “...a distance of forty or fifty miles, there was not a tree or a bush to be seen in any direction...” (Catlin 1839, p. 140), although his painting of the pipestone quarries shows a few shrubs or small trees (Catlin 1836–1837). When Bruce Fink visited the site in 1899, he observed that “...the few young trees found, though large enough to bear the foliaceous lichens which commonly migrate to rocks... scarcely bear a lichen of any kind...” (Fink 1902, p. 284). Over the past 115 years there has been a significant increase of trees and shrubs at PNM, probably due primarily to fire suppression and altered grazing and browsing regimes (Samson et al. 2004, Fuhlendorf et al. 2008, van Auken 2009). Deciduous trees and scattered shrub thickets have grown up along Pipestone Creek and the quartzite ridges. Today, vegetation at PNM includes remnant and replanted tallgrass prairie, bur oak (*Quercus macrocarpa*) woodland along the ridges, a narrow riparian woodland of boxelder (*Acer negundo*), common hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), and plains cottonwood (*Populus deltoides* subsp. *monilifera*) along the perennial Pipestone Creek, and Sioux Quartzite prairie—which develops over thin, seasonally saturated soils over quartzite bedrock (MDNR 2003). Scattered thickets of redosier dogwood (*Cornus sericea* subsp. *sericea*), Tatarian honeysuckle (*Lonicera tatarica*), and American plum (*Prunus americana*) are found in areas protected from fire. Tree ring analysis suggests that many of the bur oaks date to ca. 1880–1885 (Landers 1979) and as we document these trees now provide ample habitat for a rich corticolous lichen community.

The land comprising PNM has a long history of lichenological study, beginning with the work of Bruce Fink, who gathered 5,500 specimens in Minnesota between 1896 and 1902 for his Ph.D. dissertation and as part of the Botanical Survey of Minnesota (Wetmore 1978). During the summer of 1899, he collected approximately 30 numbers at or near the site that is now PNM, and published the results in a preliminary report (Fink 1902). The site was resurveyed by Timothy Vinyard, who reportedly collected some 350 specimens during the field seasons of 1983–1984 in support of an update of the flora of PNM (Willson & Vinyard 1986). Finally, Gerald Wheeler collected 23 lichens from PNM on May 13, 1999. In light of the substantial floristic and management changes that PNM has undergone since Fink first visited the site, and as part of a larger effort to document the lichen flora of the Great Plains, we re-inventoried the lichens of PNM and report our results here.

MATERIALS AND METHODS

Field work for this project consisted of 28 field days between 2004 and 2015. Efforts were made to survey all habitats and substrates on the site. In all, 368 collections were obtained, principally by MKA; these have been deposited in the R.L. McGregor Herbarium at the University of Kansas (KANU). In addition, we reviewed 65 specimens deposited by Vinyard in the herbarium of PNM (hereafter, hb. PNM). We assume that the Vinyard specimens were deposited in hb. PNM as a synoptic collection representing the diversity of the 65 species reported in Willson and Vinyard (1986). The remaining 285 specimens collected by Vinyard in preparation for those authors’ report could not be located and are assumed to have been lost. Finally, we reviewed 51 specimens from MIN, representing the bulk of Fink’s collections from Pipestone, and a handful of specimens gathered by Wheeler and other collectors.

Specimens were studied using dissecting and compound microscopes, and subjected to chemical analysis using standard spot tests (Brodo et al. 2001). Where it was required for positive identification, Thin Layer Chromatography (TLC) was conducted at KANU using solvent systems A and C following the methods of Orange et al. (2001).

To assess patterns of saxicolous lichen inhabitancy at the site, and to develop a baseline for future monitoring and assessment, two transects were established on Sioux Quartzite exposures at PNM (figure 1):



Figure 2. Rock formations and bur oak woods of Pipestone National Monument. A, west-facing Sioux Quartzite cliffs, with bur oak woods in the foreground; B, wooded cliff and float rock below cliff; C, wooded cliff with abundant bur oak; D, boulders below cliffs; E, saxicolous lichen community including *Acarospora contigua*, *Dimelaena oreina*, and *Phycia subtilis*. (Photographs by Nickolee Larson.)

State/Province, Country	Unit name	Area	Taxa included	No. taxa	Reference
Minnesota, USA	Pipestone National Monument	122 ha	lichens and allied fungi	171	this study
North Dakota, USA	native pine woodlands	1,821 ha	lichens	172	Hertz (2001)
North Dakota, USA	Theodore Roosevelt National Park	30,700 ha	lichens	204	Wetmore (1985)
Saskatchewan, Canada	Grasslands National Park	57,100 ha	lichens and lichenicolous fungi	217	Freebury (2014)
South Dakota, USA	Badlands National Park	98,600 ha	lichens and lichenicolous fungi	171	Will-Wolf (1998)

Table 1. Comparison of the lichen flora of Pipestone National Monument with lichen floras of several other geographic units in the Great Plains.

Transect 1 (“Flats transect”) runs along a line of exposed low flat outcrops south-southeast of the visitor center; Transect 2 (“Cliff transect”) runs along the base of the west-facing cliffs south of the small waterfall. Flags were placed at 5 meter intervals along each transect. A square 0.5 × 0.5 meter flat wooden quadrat was used, giving a sampling area of 0.25 square meters for each quadrat; each side of the square frame was marked off in 1 centimeter increments to aid in estimating lichen coverage within the quadrat (Peck et al. 2004). For the Flats transect, the quadrat was placed on the ground and centered over each marker flag, with a total of 10 quadrats sampled. For the Cliff transect, the quadrat was placed vertically upon the cliff face. At each marker-flag along the cliff transect, three quadrats were sampled: one at the cliff base with the lower edge of the frame set upon the ground (Lower Cliff); one with the frame centered at 1.5 meters height (Mid-Cliff); and one with the frame centered at 3 meters height (Upper Cliff). A total of 30 quadrats were sampled from the Cliff transect (10 from each level). All saxicolous and terricolous lichens present in each quadrat were recorded and assigned a cover-abundance value ranging from 1 to 5 according to the following protocol: 1 = less than 1% cover; 2 = 1 to <5% cover, or <1% cover but present in all 4 quadrants of the quadrat; 3 = 5 to <25% cover; 4 = 25-50% cover; 5 = >50% cover (Peck et al. 2004). Each lichen species was also given a frequency score for each quadrat (1 if present, 0 if absent), which when summed and averaged gives the mean number of species per quadrat.

Two of the authors (DL and MKA) together analyzed and reached consensus on all quadrats except those of the Upper Cliff samples, which were too high for MKA on the available ladder. Small specimens of questionable taxa were removed and determined later in the lab using standard techniques described above. Frequency (presence or absence of a species in each quadrat) and cover-abundance data from each of the four sampling data sets (Flats, Lower Cliff, Mid-Cliff, and Upper Cliff transects) were used to develop Relative Importance Values (RIV²⁰⁰) (Bray & Curtis 1957) for lichens in each data set. RIV²⁰⁰ was calculated as: (% relative frequency + % relative coverage)/2. Sørensen’s Index of Similarity (Mueller-Dombois & Ellenberg 1974) was used to compare the degree of similarity of lichen composition among the transects. Sørensen’s indices were calculated as: $2c/(a+b)$ where c is the number of species shared by both samples, a is the number of species present in one sample, and b is the number of species present in the other sample. The higher the index, the more similar are the two samples, with 1.0 representing perfect correlation and 0.0 indicating no shared species at all.

RESULTS AND DISCUSSION

Diversity. — Our field work documented a total of 154 species of lichens, four lichenicolous fungi, and one allied fungus for PNM. Review of historical collections revealed twelve species not collected by us, for a total of 171 taxa. Published studies of the lichens of the northern Great Plains are limited. However, considering the small size of the study area (122 ha), the PNM flora compares well with other reports for the region (Table 1). On each of our 28 visits to PNM we came across additional lichen species, suggesting there are still more to be found.

Included in this paper are the first published reports for Minnesota for 24 species, including 22 lichens and two lichenicolous fungi—a surprisingly large number given the long history of lichenological work in the state (e.g., Fink 1910; Bennett & Wetmore 2005a; Wetmore 1978, 2005; and references

therein). New to Minnesota from PNM are *Acarospora boulderensis*, *A. contigua*, *A. strigata*, *Agonimia opuntiella*, *Arthonia clemens*, *A. muscigena*, *Aspicilia americana*, *Bacidina delicata*, *Buellia tyrolensis*, *Caloplaca flavocitrina*, *C. lobulata*, *C. soralifera*, *Candelariella antennaria*, *Dermatocarpon arenosaxi*, *Diplotomma subdispersa*, *Endocarpon pallidulum*, *Enterographa osagensis*, *Pseudosagedia chlorotica*, *Psoroglaena dictyospora*, *Punctelia missouriensis*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. sphaerospora*. *Acarospora erythrophora* is also here reported new for Minnesota, based on a specimen collected just outside PNM in the Hiawatha Game Refuge. We also report new state records of *Acarospora erythrophora* for Kansas and Oklahoma, *Enterographa osagensis* for Nebraska and South Dakota, and *Pseudosagedia chlorotica* for Oklahoma.

In their summary of lichens in United States National Parks, Bennett and Wetmore (2005a) included 75 species of lichens reported from PNM based on five uncited reports. However, other than papers by Fink (1902) and Willson and Vinyard (1986), we know of no published reports for PNM lichens, except perhaps for a brief mention in three similar summary reports for United States National Parks (Bennett & Wetmore 1992, 2005b, 2005c). Redetermination of collections by Fink, Vinyard, Wheeler, and one specimen each collected by M. Manzel and J.P. Schuster, allowed us to adjust synonymies and to correct erroneous determinations, thereby excluding 48 species previously reported from PNM by Fink (1902) or Willson and Vinyard (1986), although three of these species were returned to the list when found later at PNM by the authors.

The following discussion and annotated list includes mention of records included in the Consortium of North American Lichen Herbaria database (CNALH 2016). While we are generally skeptical of using unverified online specimen data, most of the citations supporting species distributions in the Great Plains are based on our own collections deposited in KANU. Citations of other specimens posted to CNALH (2016) that the authors did not examine are clearly indicated as such below.

Physiognomy. — The majority of lichens at PNM were crustose, comprising 65% of the 154 species collected. Some 27% of the lichens at the site were foliose, 6% were fruticose, and 2% were squamulose. Crustose lichens were particularly dominant on lignum (72%). Foliose lichens were better represented on bark (39% of taxa), although crustose lichens still comprised the majority (59%).

Substrates and Frequency. — Primary substrates available to lichens at PNM included Sioux Quartzite, deciduous hardwood trees and shrubs, soil, wooden fences, decorticate stumps, bryophytes, other lichens, and various calcareous, anthropogenic substrates such as concrete, gravel, and a sandstone trestle. The majority of the lichens (55%) at PNM were saxicolous. Substrate affinities for the 154 taxa that we collected were as follows (several lichens were found on two or more substrates, thus the values add up to more than 154 and percentages to greater than 100%): 66 (43%) saxicolous on Sioux Quartzite, 45 (29%) corticolous, 18 (12%) saxicolous, only found on anthropogenic calcareous substrates, 18 (12%) lignicolous, 14 (9%) terricolous, 5 (3%) on detritus or dead *Selaginella* stems, and 1 (0.6%) muscicolous.

The Sioux Quartzite formation consists of four major rock types with a range in granule size from fairly coarse conglomerates to very fine red claystone (Southwick et al. 1986). The claystone (pipestone) is still actively quarried and so is generally not available as a lichen substrate. Most of the surfacing outcrops at PNM are of the hard red orthoquartzite that is so smooth as to appear polished. Crustose lichens predominated on this substrate. A much coarser-grained quartzite is quarried below ground level in the search for the red claystone. Discarded into aging heaps beside the quarries, tailings of this quartzite provide an ideal substrate for many of the foliose lichens that would otherwise be much less common at PNM, including *Phaeophyscia adiastrum*, *Physcia caesia*, *P. dubia*, and *Xanthoria elegans*. The fourth rock type of the Sioux Quartzite formation is a coarse gravel-formed conglomerate which is not present at PNM (Graham 2009).

A few lichens (e.g., *Dermatocarpon arenosaxi* and *Phaeophyscia sciastra*) were found primarily on the large, flat, ground-level outcrops of Sioux Quartzite, which are subject to significant extremes of temperature and moisture, ranging from hot, sunny, dry conditions to periodic pooling of rainwater to winter snow-cover. These lichens are not known to occur on the irregularly shaped boulders of granitic glacial erratics present throughout much of the Glaciated Plains (see, EPA 2011) of North and South Dakota and southwestern Minnesota (MKA unpublished data). A handful of species were unique to the sheer vertical faces of Sioux Quartzite cliffs where a cooler, shadier, more humid microclimate was present near the cliff base, somewhat protected from direct wetting; *Caloplaca flavocitrina* and *Lepraria finkii* were found in this niche at PNM.

Taxon/transect	Flats	Upper Cliff	Mid-Cliff	Lower Cliff
<i>Acarospora americana</i>	5.15	4.96	6.07	0.97
<i>Acarospora contigua</i>	1.25	3.67	0.95	0.97
<i>Aspicilia</i> spp.*	7.64	6.79	6.46	0.97
<i>Buellia aethalea</i>	0.53	—	—	—
<i>Buellia tyrolensis</i>	1.06	—	—	—
<i>Caloplaca chlorina</i>	0.53	—	0.95	3.06
<i>Caloplaca flavocitrina</i>	—	—	3.23	3.43
<i>Caloplaca holocarpa</i>	1.06	—	2.84	4.63
<i>Caloplaca sideritis</i>	2.84	1.83	3.23	0.97
<i>Caloplaca subsoluta</i>	2.11	—	—	—
<i>Candelaria concolor</i>	4.22	6.41	6.62	7.18
<i>Candelariella vitellina</i>	6.26	0.92	0.95	—
<i>Cladonia pyxidata</i>	2.17	—	—	—
<i>Dermatocarpon arenosaxi</i>	1.78	1.83	1.34	—
<i>Dimelaena oreina</i>	9.22	12.95	4.73	—
<i>Hyperphyscia</i> sp.	—	0.92	—	0.97
<i>Lecanora dispersa</i>	—	0.92	1.34	2.92
<i>Lecanora muralis</i>	5.4	—	—	—
<i>Lepraria finkii</i>	—	—	3.62	3.29
Lichinaceae genus 1	1.78	—	—	—
Lichinaceae genus 2	0.92	—	—	—
<i>Peltula euploca</i>	—	—	0.95	0.97
<i>Phaeophyscia adiastrata</i>	0.53	1.83	3.23	11.49
<i>Phaeophyscia hirsuta</i>	—	—	0.95	0.97
<i>Physcia caesia</i>	—	0.92	—	0.97
<i>Physcia dakotensis</i>	3.56	8.85	4.57	1.71
<i>Physcia dubia</i>	3.29	—	—	—
<i>Physcia halei</i>	5.54	5.34	7.96	6.21
<i>Physcia subtilis</i>	6.98	14.31	15.55	14.31
<i>Physciella chloantha</i>	—	1.83	0.95	4.26
<i>Physciella melanchra</i>	0.53	4.58	—	0.97
<i>Rhizocarpon disporum</i>	6.52	2.75	1.89	—
<i>Rhizoplaca chrysoleuca</i>	2.90	—	—	—
<i>Rinodina siouxiana</i>	2.31	7.55	6.85	7.32
<i>Staurothele areolata</i>	2.7	—	—	—
<i>Verrucaria sphaerospora</i>	3.36	0.92	3.23	2.32
<i>Xanthomendoza fallax</i>	2.11	9.01	9.69	8.66
<i>Xanthomendoza ulophyllodes</i>	—	—	—	0.97
<i>Xanthomendoza weberi</i>	1.06	0.92	0.95	7.55
<i>Xanthoparmelia mexicana</i>	4.68	—	—	—
<i>Xanthoparmelia viriduloumbrina</i>	—	—	0.95	—
unknown areoles	—	—	—	0.97
unknown green crust	—	—	—	0.97
taxa/transect	31	22	26	27
mean taxa/quadrat	15.5	9.3	9.3	8.5

Dominant lichens on horizontal Sioux Quartzite outcrops included *Dimelaena oreina*, *Physcia dakotensis*, and *P. subtilis*; also common were *Aspicilia americana*, *A. cinerea*, *Rhizocarpon disporum*, *Xanthoparmelia mexicana*, and, in wetter areas, *Staurothele areolata*. Species that favored large quartzite boulders with sloping faces include *Buellia badia*, *B. tyrolensis*, *Candelariella vitellina*, *Rhizoplaca chrysoleuca*, and *Verrucaria sphaerospora*. Lichens that grew mostly on basal, humid, and/or shaded portions of quartzite fragments included *Caloplaca chlorina*, *C. sideritis*, and *C. subsoluta*. Three typically corticolous taxa, near the western limit of their Great Plains range (Brodo et al. 2001; CNALH 2016), were found only on Sioux Quartzite at PNM: *Physconia leucoleiptes*, *Punctelia rudecta*, and *Xanthomendoza ulophyllodes*. Many lichens that are typically corticolous were also found to be abundant on quartzite fragments under trees; these include *Candelaria concolor*, *Physciella melanchra*, *Xanthomendoza fallax*, and *X. weberi*.

Based on the first author's collecting experience at twelve other Sioux Quartzite outcrops in Iowa, Minnesota, and South Dakota, the lichen flora on quartzite at PNM appears to be particularly diverse (MKA unpublished data). Compared with these other sites, PNM has a greater variety of rock forms (cliffs, flats, and boulders), exposed and shaded outcrops, smooth and coarse rocks, and abundant tailings, all of which might support a more diverse population of lichens.

Calcareous substrates at PNM are virtually all anthropogenic, and include concrete, imported calcareous gravel, and the ruins of a train trestle constructed ca. 1884 of imported sandstone of unknown provenance (Rose 1911). Twenty-two taxa were found on these substrates, including two undetermined species of *Verrucaria* on the sandstone. A thin calcareous deposit over the surface of a single Sioux Quartzite boulder provided the only natural calcareous substrate, from which the sole collection of *Sarcogyne regularis* was obtained. Saxicolous taxa that grow on calcareous substrates at PNM include *Acarospora strigata*, *Caloplaca feracissima*, *C. pratensis*, *C. soralifera*, *Candelariella aurella*, *Circinaria contorta*, *Endocarpon pallidulum*, *E. petrolepideum*, *Lecanora dispersa*, *Phaeophyscia nigricans*, *Rinodina castanomelodes*, *Sarcogyne regularis*, *Staurothele drummondii*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. nigrescens*.

Corticolous lichens comprised 29% of the Pipestone taxa, and are typical of the diversity and abundance of such lichens in the Prairie Coteau region of the northern Great Plains (CNALH 2016). *Physciella melanchra* and *Xanthomendoza fallax* were the dominant lichens on hardwood boles; also abundant were *Hyperphyscia confusa*, *Physciella chloantha*, and *Xanthomendoza weberi*. *Caloplaca ulcerosa* was occasional at the bases of hardwood boles. *Physcia stellaris* was the dominant lichen on exposed branches of trees and shrubs; less frequent on such branches were *Amandinea dakotensis*, *Arthonia muscigena*, *Arthrosporum populorum*, *Rinodina populicola*, *R. pyrina*, *Teloschistes chrysophthalmus*, and *Xanthomendoza hasseana*.

Most of the lignicolous lichens at the monument occurred on wooden fences; *Caloplaca microphyllina* was the most abundant. In more heavily forested areas east of the Great Plains there are a number of corticolous lichens which in the Great Plains often grow on wooden fence posts and rails instead of bark; just such a change of substrate was demonstrated at PNM by *Flavopunctelia flaventior*, *Parmelia sulcata*, and *Ramalina culbersoniorum*. Similarly, taxa that are usually saxicolous will occasionally inhabit wooden fences in the Great Plains; examples at PNM included *Caloplaca subsoluta*, *Candelariella aurella*, and *Candelariella vitellina*.

In pastures and prairies throughout the northern Great Plains, three of the most common terricolous lichens are *Endocarpon pallidulum*, *Diploschistes muscorum*, and *Placidium squamulosum* (CNALH 2016); all three taxa are present at PNM. A fourth terricolous lichen common in the Great Plains, *Bacidia bagliettoana*, was collected at PNM by Fink. Although not found by the authors at PNM, we have collected it elsewhere in Pipestone County.

The most abundant lichens associated with the thin layer of soil that often accumulates over the flat, low quartzite outcrops were *Cladonia magyarica*, *C. pyxidata*, and *Dermatocarpon arenosaxi*, the last

Table 2 (Page 62). Saxicolous lichen community composition on Sioux Quartzite at Pipestone National Monument, based on transect sampling data. Figures in columns are relative importance values based on frequency and cover-abundance data (RIV²⁰⁰). Taxa present in all four transects are in bold-face type. A dash (—) indicates that a species was not observed in a given transect. *Note* (*): *Aspicilia americana* and *A. cinerea* are found at PNM but since they cannot be distinguished from each other with confidence in the field, they are here represented as *Aspicilia* spp.

	Flats	Upper Cliff	Mid-Cliff
Lower Cliff	0.55	0.73	0.79
Mid-Cliff	0.67	0.75	
Upper Cliff	0.68		

Table 3. Sørensen's Index of Similarity among four saxicolous lichen sampling transects at Pipestone National Monument.

growing both on soil and directly on quartzite. The vascular cryptogam northern selaginella (*Selaginella rupestris*) shares this same niche and the dead stems and leaves of this species provided substrate for *Amandinea polyspora* and *Caloplaca thuringiaca*.

Biogeographic Affinities. — Pipestone National Monument lies along a transition between the grasslands of the Great Plains to the west and the woodland biomes to the north and east. As woodlands transition to grasslands through the increasingly arid western plains, many corticolous lichens reach their range limits. Five species reach the western edge of their distributional ranges for eastern North America here: *Alyxoria varia*, *Flavoparmelia baltimorensis*, *Parmotrema reticulatum*, *Punctelia rudecta* (Brodo et al. 2001), and *Xanthomendoza weberi* (Lindblom 1997, 2005). In the Great Plains to the west of PNM these species are either absent or restricted to isolated, unusually mesic habitats (the authors, unpublished data). Three species common throughout both the Great Plains and the western United States reach the eastern limit of their ranges at PNM; these include *Candelariella antennaria*, *Phaeophyscia nigricans*, and *Physcia biziana* (CNALH 2016). A fourth species, *Acarospora erythrophora*, is apparently rare in the Great Plains, with its distribution centered in northern Mexico (Knudsen 2007a). Finally, within North America, *Caloplaca lobulata* appears to be primarily a Great Plains species, reaching the eastern limit of its range at PNM (the authors, unpublished data). Of the 84 saxicolous taxa at PNM, none appear to be at their western limit but five species—*Acarospora strigata*, *Caloplaca pratensis*, *C. soralifera*, *Rinodina castanmelodes*, and *Verrucaria sphaerospora*—appear to be at or near the eastern edge of their ranges (CNALH 2016).

Quantitative Studies of Saxicolous Lichen Communities. — Transect sampling data revealed a distinct community of lichens associated with extensive Sioux Quartzite exposures at PNM (Table 2). A total of 43 taxa were recorded; 15 of these occurred in only a single transect. Although composition varied among the different cliff level transects, all three had similar species diversity and relative dominance patterns, with approximately half of all coverage accounted for by the five most abundant lichens at each cliff height. All three cliff levels were essentially vertical faces. Although one would expect that there would be significant humidity, and possibly shading, gradients from upper to lower cliff, this was reflected only in composition, but not in patterns of occupancy (coverage) or overall diversity.

The degree of species similarity among the sampling transects, as determined using Sørensen's index of similarity (Table 3), reinforces the impression of the unique nature of the Flats transect as compared with transects from the three different cliff heights. A lichen species was considered to be dominant within a particular transect if it had one of the top five highest RIV²⁰⁰ values for that transect. Only *Physcia subtilis* was dominant in all four transects; *Xanthomendoza fallax* was dominant in all three cliff transects. Three of the top five dominants in the Flats transect were not dominant in any of the cliff transects.

Table 2 shows that the Flats transect had greater overall species diversity (species per transect) than did any of the three Cliff transects. The average number of species per quadrat for the Flats transect exceeded that of each of the Cliff transects by at least 65%. The Flats transect also had nearly twice the mean cover-abundance totals (per quadrat) of any of the Cliff transects (Table 4). This increased lichen diversity and coverage of the Flats may reflect the increased moisture availability on horizontal surfaces versus vertical surfaces. Another factor is the presence of varying amounts of aeolian or fluvially deposited silt on portions of the outcrops, increasing mineral availability and moisture retention.

RIV²⁰⁰ Rank/ Transect	Flats	Upper Cliff	Mid-Cliff	Lower Cliff
1	<i>Dimelaena oreina</i> (9.22)	<i>Phycia subtilis</i> (14.31)	<i>Phycia subtilis</i> (15.55)	<i>Phycia subtilis</i> (14.35)
2	<i>Aspicilia</i> spp. (7.64)	<i>Dimelaena oreina</i> (12.95)	<i>Xanthomendoza fallax</i> (9.69)	<i>Phaeophycia adiastrum</i> (12.19)
3	<i>Phycia subtilis</i> (6.98)	<i>Xanthomendoza fallax</i> (9.01)	<i>Phycia halei</i> (7.96)	<i>Xanthomendoza fallax</i> (8.66)
4	<i>Rhizocarpon disporum</i> (6.52)	<i>Phycia dakotensis</i> (8.85)	<i>Rinodina siouxiana</i> (6.85)	<i>Xanthomendoza weberi</i> (7.55)
5	<i>Candelariella vitellina</i> (6.26)	<i>Rinodina siouxiana</i> (7.55)	<i>Candelaria concolor</i> (6.62)	<i>Rinodina siouxiana</i> (7.32)
Mean number of taxa per quadrat:				
	15.1	9.4	9.2	8.3
Mean cover-abundance totals per quadrat:				
	25.4	13.3	13.1	13.5

Table 4. Five highest-ranked lichen species by Relative Importance Value (RIV²⁰⁰) for each community with comparison of frequency and cover-abundance averages among transects.

ANNOTATED LIST OF THE LICHENS, LICHENICOLOUS FUNGI, AND ALLIED FUNGI OF PIPESTONE NATIONAL MONUMENT

The list below enumerates all of the lichens, lichenicolous fungi (#), and allied fungi (^) currently reported from Pipestone National Monument. In general, we follow the nomenclatural concepts of Esslinger (2015). Although we adopted a conservative taxonomy for Lecanoraceae and Teloschistaceae, changes recently proposed by Zhao et al. (2015) and Arup et al. (2013), which seem likely to be taken up more broadly in the future, are included here in brackets. For each taxon, a description of substrate is given and an abundance indicator is provided for Advaita collections. These data apply only to the monument site; some lichens have different predilections elsewhere in their range. In some cases, brief synopses of salient morphological features are provided. Herbarium codes follow Thiers (2016), except that Hb. PNM designates the herbarium at Pipestone National Monument. Claims of first published reports for the state are based on Wetmore (2005, 2009b), as supplemented by recent taxonomic treatments known to the authors. Twenty-four species are reported for the first time for Minnesota (*).

Acarospora americana H. Magn. – Uncommon on horizontal Sioux Quartzite outcrops. *Advaita* 7133, 8710 (both KANU), *Vinyard* 1055 (Hb. PNM).

**Acarospora boulderensis* H. Magn. – Rare, on a Sioux Quartzite cap-rock on top of a quarry wall, and on a massive shaded Sioux Quartzite boulder. *Advaita* 7178, 15148 (both KANU). This species was segregated from *Acarospora badiifusca* (Nyl.) Th. Fr. by Knudsen et al. (2014). *Acarospora boulderensis* produces a squamulose thallus with a photobiont layer interrupted by hyphal bands ca. 10–20 µm wide (vs. a crustose thallus with an uninterrupted photobiont layer in *A. badiifusca*), and a hymenium (80–)100–120(–140) µm high (vs. 60–80(–100) µm high fide Knudsen et al. 2014). For a complete description and illustrations of both species, see Knudsen et al. (2014). First report for Minnesota, although previous reports of *A. badiifusca* may be based on this species.

**Acarospora contigua* H. Magn. – Common on quartzite outcrops. *Advaita* 7131-A, 15163 (both KANU), *Fink* 598, 611 (both MIN), *Vinyard* 1109 (Hb. PNM), *Wheeler* 16549 (MIN). First report for Minnesota, although previous reports of *Pleopsidium flavum* (Bellardi) Körber may be based on this species. *P. flavum* has been documented from the western edge of the Great Plains and Black Hills but is not known from the eastern Great Plains and all specimens determined as *P. flavum* that we have examined from Minnesota are *A. contigua*. The two genera differ in features of the ascus (see Knudsen 2007b).

*[*Acarospora erythrophora* H. Magn. – This species is unknown from PNM, but occurs at the adjacent Hiawatha State Game Refuge, on an exposed quartzite outcrop. TLC: rhizocarpic acid, norstictic

- acid, gyrophoric acid. *Wheeler 19596* (MIN). This specimen appears to represent a significant range extension for the species. *Acarospora erythrophora* was previously reported from the southwestern United States and northwestern Mexico (Knudsen 2007a), and is also known to the authors from a small number of historic collections from south-central Kansas [Kiowa Co., *Fearing 397b*, *Fearing 400*, *McGregor 3244* (all KANU)] and from southwest Oklahoma [Comanche Co., *Morse 20447* (KANU)]. *Acarospora erythrophora* may be confused with *Pleopsidium flavum*, which has been documented from the western edge of the Great Plains and Black Hills, but the two differ in features of the ascus, as well as chemistry (see Knudsen 2007b). *Acarospora contigua* occasionally produces a subeffigurate thallus, but that species is more distinctly areolate and lacks norstictic and gyrophoric acids. It is worth noting that Knudsen (2007a) did not report norstictic acid as constituent in *A. erythrophora*, but it occurs in all Great Plains specimens. These are the first reports for Kansas, Minnesota, and Oklahoma.]
- Acarospora fuscata* (Schr.) Th. Fr. – Rare, collected only as an admixture, on ground-level quartzite. *Advaita 8685* (KANU, sub *Lecanora opiniconensis*).
- **Acarospora strigata* (Nyl.) Jatta – Uncommon on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita 8717* (KANU).
- Acrocordia cavata* (Ach.) R.C. Harris – Uncommon on boles of mature cottonwoods. *Advaita 8680* (KANU).
- **Agonimia opuntiella* (Buschardt & Poelt) Vězda – Rare, on detritus over soil. *Advaita 12666-B* (KANU).
- Agonimia* sp. 1 – On remains of *Selaginella*. *Advaita 7122* (sub *Amandinea polyspora*), *15108*, *15159* (all KANU). Thallus verrucose to minutely squamulose, dark olive green; cortical cells papillate; ascomata black, smooth, hemispheric, ca. 0.1 mm in diameter; asci 2-spored; ascospores hyaline to pale brown, muriform, ca. 38–51(–72) × 20–25(–35) µm. This species, known to the authors from a handful of specimens from the northern and western parts of the Great Plains, may be the same taxon reported by Freebury (2014) as *Agonimia* cf. *vouauxii* (B. de Lesd.) M. Brand & Diederich. In addition to this species, two other specimens are tentatively assigned to *Agonimia*. Neither bears reproductive structures or the cortical hairs typical of *A. opuntiella*. [1: On sheer west-facing quartzite wall. *Advaita 7198-B* (KANU). Squamules ± flattened. 2: On soil over low, flat quartzite outcrops. *Advaita 15094* (KANU). Squamules ± flattened, blastidiate; no substances detected by TLC.]
- Alyxoria varia* (Pers.) Ertz & Tehler (syn. *Opegrapha varia* Pers.) – Common on cottonwood and bur oak. *Advaita 8682* (KANU).
- Amandinea dakotensis* (H. Magn.) P. May & Sheard – Occasional on exposed branches of American plum. *Advaita 7160*, *Ladd 31009* (sub *Rinodina pyrina*) (both KANU).
- Amandinea polyspora* (Willey) E. Lay & P. May – Somewhat common on detritus [dead leaves and stems of *Selaginella rupestris*]. *Advaita 7122*, *15584-B* (both KANU). On black willow. *Vinyard 1131* (Hb. PNM).
- Amandinea punctata* (Hoffm.) Coppins & Scheid. – Common on wooden fence posts and braces. *Advaita 7151-A*, *Ladd 31001* (both KANU).
- *#*Arthonia clemens* (Tul.) Th. Fr. *vel aff.* – On apothecia of *Lecanora opiniconensis*. *Fink 643* (MIN, sub *Montanelia tominii*). This appears to be the first report of *A. clemens* infecting *L. opiniconensis*; the previously reported host is *Rhizoplaca* (Grube 2007).
- **Arthonia muscigena* Th. Fr. – Uncommon, on exposed branches of American plum, and overgrowing terricolous bryophytes. *Advaita 8701-A*, *12652*, *12668* (sub *Cladonia cariosa*), *15105-B* (all KANU). Thallus epiphloedal, of small, grayish-green granules; photobiont chlorococcoid; ascomata convex, rounded to oblong, 0.1–0.3 mm in diameter, matte, dark brown to black; epithecium pale brown to grayish brown; paraphysoids branched above; hypothecium pale to medium reddish brown; asci clavate, 8-spored; ascospores hyaline, 1-septate with unequal to ± equal cells, constricted, ca. 8–11(–13) × 4.5–6 µm. This corticolous member of the *Arthonia exilis* group appears to be common throughout the Great Plains. This is the first documented occurrence for Minnesota, although previous reports of *A. patellata* Nyl. may also be referable to this species. *Arthonia patellata* has larger ascomata (0.3–0.7 mm in diameter) with ± unbranched paraphysoids, dark brown to black hypothecia, and slightly larger spores (9–15 × 3–5 µm) (Coppins & Aptroot 2009). In the Great Plains, *A. muscigena* occurs on smooth or rough, circumneutral bark of a wide variety of woody plant species, and occasionally on detritus (CAM, unpublished data); *A.*

- patellata* is reported to be restricted to the smooth bark of *Populus* species (Coppins & Aptroot 2009).
- ^Arthonia sp. 1** – On open-grown American plum. *Advaita* 7161-A (KANU, sub *Rinodina pyrina*). Thallus endophloedal, resulting in a pale gray discoloration of the bark; photobiont absent; ascomata oblong to elongate, 0.1–0.4 × ca. 0.1 mm, matte, black, sometimes with a few weak branches; epithecium charcoal gray; hypothecium hyaline; asci broadly ellipsoid, 8-spored; ascospores hyaline, 1-septate with unequal cells, ca. 10–11.5 × 3.5–4.5 µm. This species may be the same taxon as *Arthonia* “sp. 44286” of Harris and Ladd (2005). *Arthonia* is poorly known in North America, and sorely in need of revision.
- Arthrosporum populorum** A. Massal. – Common on small exposed branches of green ash and American plum. *Advaita* 7106, 7147, *Ladd* 31009 (sub *Rinodina pyrina*) (all KANU), *Vinyard* 1153 (Hb. PNM, sub *Caloplaca pyracea*).
- *Aspicilia americana** B. de Lesd. – Abundant on low, flat quartzite outcrops. TLC (all specimens except as noted): unknown terpenoids. *Advaita* 4332, 8708 (both KANU), *Fink* 625 (MIN), *Vinyard* 2058 (Hb. PNM, material insufficient for TLC). First report for Minnesota, although previous reports of *Aspicilia caesiocinerea* may be based on this species.
- Aspicilia cinerea** (L.) Körber – Occasional on quartzite cliffs and low, flat outcrops. All specimens K+ red (norstictic acid). *Advaita* 4333, 7177, 8711, 8712-A, *Ladd* 30982, 30984 (all KANU), *Vinyard* 4098 (Hb. PNM).
- Bacidia bagliettoana** (A. Massal. & De Not.) Jatta – [On exposed earth (Fink 1902).] *Fink* 590, 591 (MIN, n.v.). Although the authors were unable to examine the vouchers cited (as *Biatora muscorum*) in Fink (1902), *Bacidia bagliettoana* is a common terricolous lichen in the northern Plains and is included here based on records downloaded from CNALH (2016).
- Bacidia granosa** (Tuck.) Zahlbr. – On concrete. *Advaita* 15151 (KANU), *Vinyard* 2054 (Hb. PNM). *Bacidia granosa* was recently resurrected by Ekman (2014). It appears to be the common member of the *B. coprodes* group in eastern North America, although *B. coprodes* (Körber) Lettau is known from the Black Hills (Ekman 2014).
- *Bacidina delicata** (Leighton) V. Wirth & Vězda – Somewhat common; on lower boles of bur oak and green ash, also on bryophytes and on shaded quartzite fragments and tailings in dry ravine and near waterfall. *Advaita* 7172, 7173-B (sub *Enterographa osagensis*), 7197-A, 15137-A, 15138, 15139-A, 15159-B (sub *E. osagensis*) (all KANU).
- Bacidina egenula** (Nyl.) Vězda – Uncommon on quartzite tailings in seasonal creek bed. *Advaita* 7173-B, 7186-A (both KANU).
- Buellia aethalea** (Ach.) Th. Fr. *vel aff.* – Abundant on weathered mounds of quartzite tailings. *Advaita* 7120 (norstictic acid not detected by KOH test), 7176 (TLC: trace norstictic acid), 15099 (norstictic acid detected by KOH test) (all KANU). Specimens are referred here somewhat tentatively and based largely on morphology—particularly by the presence of immersed, rounded to somewhat irregularly shaped apothecia with colorless hypothecia—, as diagnostic tests for *elachista*-brown and *cinereorufa*-green discussed for the species by Bungartz et al. (2007) frequently yield inconclusive results for our material, and norstictic acid is recovered only sporadically. The typically ashy-gray thallus distinguishes *B. aethalea* from *B. nigra*, which has a dark brown thallus and always lacks norstictic acid (Sheard 1969). While material fitting our concept of *B. aethalea* is rather common in the northern Great Plains, the authors have seen few specimens that we believe to be clearly referable to *B. nigra sensu* Sheard (1969). See discussion of *Buellia nigra* under “Synonyms and doubtful and excluded species” below.
- Buellia badia** (Fr.) A. Massal. (syn. *B. turgescens* Nyl. ex Tuck. [see Bungartz & Nash 2004]) – Occasional on low, flat quartzite outcrops. *Advaita* 8706 (KANU, sub *B. tyrolensis*), *Wheeler* 19544 (MIN). *Buellia badia* and *B. tyrolensis* are sometimes difficult to separate in the Great Plains. The species frequently occur together, even overgrowing one another, and occasionally intergrade morphologically. Ascospore sizes overlap and, while conidiospores may be useful in distinguishing the species (fide Bungartz et al. 2007), pycnidia are often rare and difficult to find. We have referred to *B. badia* specimens with a squamulose thallus and sessile apothecia with a prominent margin, and have referred to *B. tyrolensis* specimens with an areolate thallus with a ± well developed, gray to black prothallus and immersed apothecia (often with a thalline veil). However, it is not uncommon for the central areoles of larger thalli of *B. tyrolensis* to become subsquamulose with ± adnate apothecia and for the prothallus to be poorly developed or

occasionally altogether lacking. While there is broad overlap in thallus coloration, the thallus of *B. badia* is frequently more olive brown, while the thallus of *B. tyrolensis* is dark brown to ruddy brown, or often with whitish areole margins. Although we have encountered material referable to *B. badia* on both siliceous rocks and lignum, *B. tyrolensis* appears to show strong fidelity to siliceous rocks. Saxicolous specimens of both *B. badia* and *B. tyrolensis* are often closely associated with *Dimelaena oreina* and may be juvenile parasites of that species.

**Buellia tyrolensis* Körb. (syn. *B. novomexicana* B. de Lesd. [see Bungartz 2004]) – Occasional on low, flat quartzite outcrops. *Advaita* 7137, 8706 (both KANU), *Fink* 600 (MIN). First report for Minnesota, although several specimens examined from the state were previously determined as *Buellia nigra*. See discussion of *B. nigra* under “Synonyms and doubtful and excluded species” below.

Buellia sp. 1 – Locally common on mounds of weathered quartzite tailings. *Advaita* 7200-A (sub *Lecanora dispersa*), 7200-B, 15099 (sub *Buellia aethalea*), 15100 (all KANU). Thallus chasmolithic to epilithic and gray, developed only around apothecia; apothecia 0.2–0.3 mm diam., sessile, lecideine; exciple brown, HNO₃-; hypothecium hyaline; paraphyses capitate, distal cells brown, HNO₃-; ascospores ca. 10–13 × 5–7 µm, septum not thickened during ontogeny; conidia not observed. Not tested by TLC, but some sections appear to be KOH+ yellow (stictic acid?). This species resembles *B. vilis* Th. Fr., but lacks the red-brown to blackish pigment characteristic of that species (Bungartz et al. 2007). It appears to be common on glacial erratics in the northern Great Plains.

Caloplaca arenaria (Pers.) Müll. Arg. [*Rufoplaca arenaria* (Pers.) Arup, Søchting & Frödén] – Uncommon on quartzite tailings. *Advaita* 7169 (KANU).

Caloplaca chlorina sensu Wetmore (2005) – Abundant on shaded quartzite tailings in seasonal creek bed. *Advaita* 7126, 7174, 15595 (all KANU). Sterile collections key to *Caloplaca chlorina* (Flotow) H. Olivier, with a gray, dark gray, or brownish gray, areolate thallus producing K+ purple isidio-sorediate diaspores. However, the apothecia of fertile specimens are lecideine with orange discs and prominent, pale orange margins. The species does not appear to be properly included in the *C. cerina* group (Šoun et al. 2011). It may be merely a saxicolous form of *C. lignicola*, or represent an undescribed taxon. It is common on non-calcareous rocks throughout the northern Great Plains; the authors are currently undertaking a broader study of material from the region.

Caloplaca chrysophthalma Degel. [*Solitaria chrysophthalma* (Degel.) Arup, Søchting & Frödén] – Rare, on a cottonwood bole. *Advaita* 8679-A (KANU).

Caloplaca feracissima H. Magn. [*Xanthocarpia feracissima* (H. Magn.) Frödén, Arup & Søchting] – Abundant and dominant on weathered concrete sidewalk; also on calcareous gravel, and on a thin calcareous deposit over a quartzite boulder. *Advaita* 7180, 7189-B (both KANU), *Vinyard* 1099 (Hb. PNM).

**Caloplaca flavocitrina* (Nyl.) H. Olivier [*Flavoplaca flavocitrina* (Nyl.) Arup, Søchting & Frödén] – Uncommon on sheer west-facing quartzite cliff. *Advaita* 7201 (KANU). First report for Minnesota, although previous reports of *Caloplaca citrina* (Hoffm.) Th. Fr. are likely to be this species. For the distinction between *C. citrina* and *C. flavocitrina*, see Arup (2006).

Caloplaca flavorubescens (Huds.) J. R. Laundon [*Gyalolechia flavorubescens* (Hudson) Søchting, Frödén & Arup] – Rare; on bur oak and cottonwood boles. *Advaita* 7196, 8679-B (both KANU).

#*Caloplaca grimmiae* (Nyl.) H. Olivier – Rare, parasitic on *Candelariella vitellina* growing on the slanted flat face of a quartzite boulder. *Advaita* 8709 (KANU).

Caloplaca holocarpa (Hoffm. ex Ach.) M. Wade [*Athallia holocarpa* (Hoffm.) Arup, Frödén & Søchting] – Common on quartzite fragments in seasonal creek bed, and on old fence rails. *Advaita* 7151-C, 7167-A, 8687 (all KANU).

Caloplaca lignicola Wetmore – Rare, collected once on a weathered, fallen wooden fence post. *Advaita* 7154 (KANU).

**Caloplaca lobulata* (Flörke) B. de Lesd. [*Calogaya lobulata* (Flörke) Arup, Frödén & Søchting] – Occasional on small exposed branches of green ash and American plum. *Advaita* 12651, 15091 (both KANU). This corticolous species has long been included on the list for North America but those reports were primarily based on saxicolous species probably referable to members of the *C. saxicola* group (e.g., Fink 1935). Its identity and Great Plains distribution will be discussed in a forthcoming paper.

- Caloplaca microphyllina* (Tuck.) Hasse – Dominant on weathered wooden fence braces and posts. *Advaita* 7148 (KANU).
- Caloplaca pratensis* Wetmore – Abundant on old concrete sidewalk; also on flat top of massive calcareous sandstone blocks of an abandoned train trestle. *Advaita* 8720 (KANU).
- Caloplaca pyracea* (Ach.) Zwackh. [*Athallia pyracea* (Ach.) Arup, Frödén & Söchting] – Common on branches and boles of green ash and cottonwoods. *Advaita* 4316, 15106-B (both KANU), *Vinyard* 1153, 2010 (both Hb. PNM). For the distinction between *Caloplaca holocarpa* sensu stricto and other members of the *C. holocarpa* group, including *C. pyracea*, see Arup (2009).
- Caloplaca sideritis* (Tuck.) Zahlbr. – Common on low, flat quartzite outcrops and mounds of tailings; occasional on quartzite cliffs. *Advaita* 7116, 7164, 7170-A, 7170-B (all KANU), *Fink* 613 (MIN, det. C.M. Wetmore).
- **Caloplaca soralifera* Vondrák & Hrouzek – Abundant on weathered sidewalk; also on calcareous gravel. *Advaita* 7113, 7182 (both KANU).
- Caloplaca stillicidiorum* (Vahl) Lygne – On detritus in wetlands. *Advaita* 12666-B (sub *Agonimia opuntiella*), *Advaita* 12667 (sub *Caloplaca* aff. *thuringiaca*) (both KANU). This species was treated as conspecific with *Caloplaca cerina* (Ehrh. ex Hedwig) Th. Fr. by Wetmore (2007), but Šoun et al. (2011) have presented molecular and ecological evidence supporting its segregation as a distinct species. Our material comports more or less well with ecotype 4 of Šoun et al. (2011).
- Caloplaca subsoluta* (Nyl.) Zahlbr. [*Squamulea subsoluta* (Nyl.) Arup, Söchting & Frödén] – Occasional on low quartzite outcrops; collected once from wooden fence post lying on ground (rare on this substrate). *Advaita* 7113, 7152, 12673-B (all KANU), *Fink* 607 (MIN, det. C.M. Wetmore), *Vinyard* 2192, 2041 (both Hb. PNM).
- Caloplaca thuringiaca* Söchting & Stordeur *vel* aff. – On detritus (dead stems of *Selaginella*) in wetlands. *Advaita* 12667 (KANU). Apothecia zeorine, pale yellow to yellow orange, to 0.3 mm diam.; ascospores 8 per ascus, 9–12.5 × 5–7 µm, isthmus (2.5–)3–5 µm. This species, a member of the *C. holocarpa* group, has not been reported for North America, but our material is similar to a specimen tentatively identified as *C. thuringiaca* by Ulrik Söchting [South Dakota, Edmunds Co., Wetmore 12697 (MIN)]. We are equally tentative about the determination here.
- Caloplaca ulcerosa* sensu Wetmore (2004, 2009a) – Occasional on lower boles of green ash and bur oak. *Advaita* 4321-B (det. C.M. Wetmore), 7155-C, 15102 (all KANU). Vondrák et al. (2013) have noted that North American material referred by Wetmore (2004, 2009a) to *Caloplaca ulcerosa* Coppins & James is morphologically and ecologically distinct from the maritime *C. ulcerosa* sensu stricto. ITS sequence data suggest that this North American element of the *C. ulcerosa* group forms a sister relationship with the continental European species *C. substerilis* Vondrák, Palice & van den Boom, although Vondrák et al. (2013) were unable to find morphological differences between North American *C. ulcerosa* and *C. substerilis*. Pending further investigation of the identity of the North American entity, we here refer it to *C. ulcerosa*.
- Caloplaca ulmorum* (Fink) Fink – Occasional on boles of bur oak and green ash. *Advaita* 7155-A (KANU). This species was treated as conspecific with *Caloplaca cerina* by Wetmore (2007), but Šoun et al. (2011) have presented molecular and morphological evidence which supports segregation as a distinct species, closely related to the European *C. monacensis* (Leder.) Lettau.
- Candelaria concolor* (Dickson) Stein – Abundant on boles and branches of hardwoods; also common on quartzite cliffs and quarry tailings. *Advaita* 4312 (KANU), *Vinyard* 1149 (Hb. PNM).
- Candelaria fibrosa* (Fr.) Müll. Arg. – Rare, on American plum. *Advaita* 8698 (KANU).
- **Candelariella antennaria* Räsänen – Uncommon on cottonwoods along Pipestone Creek. *Advaita* 8677 (KANU).
- Candelariella aurella* (Hoffm.) Zahlbr. – Occasional on partly shaded concrete cap over a quarry wall; also on wooden fence. *Advaita* 8695-B, 8726, 15107 (all KANU).
- Candelariella efflorescens* R.C. Harris & W.R. Buck – Rare, on wooden fence rail. *Advaita* 15156, 15580 (both KANU). Both specimens are sterile and are referred here to *C. efflorescens* based on the inferred distribution of this species presented in Lendemer and Westberg (2010), and on fertile material of *C. efflorescens* collected ca. 48 km northeast of PNM [Lyon Co., *Advaita* 13847 (KANU)].
- Candelariella lutella* (Vain.) Räsänen – Rare, on wooden fence rail. *Advaita* 15154, 15581 (both KANU).
- Candelariella subdeflexa* (Nyl.) Lettau – Occasional on boles of green ash. *Advaita* 4312-B, 12654 (both KANU).

- Candelariella vitellina* (Hoffm.) Müll. Arg. – Common on quartzite tailings and low, flat outcrops; also on fallen wooden fence post, and detritus in wetlands. *Advaita* 7134, 7153, 7168, 8695-A, 12666-A (all KANU), *Fink* 629 (MIN, det. C.M. Wetmore), *Vinyard* 3055 (Hb. PNM).
- Chrysothrix caesia* (Flotow) Ertz & Tehler (syn. *Arthonia caesia* (Flotow) Körber) – Rare, on base of American plum. *Advaita* 8699 (KANU).
- Circinaria contorta* (Hoffm.) A. Nordin, S. Savić & Tibell (syn. *Aspicilia contorta* (Hoffm.) Kremp.) – Rare, known from a single collection on a massive calcareous sandstone block from abandoned train trestle. *Advaita* 15590 (KANU).
- Cladonia acuminata* (Ach.) Norrlin – A single historic record; on soil. *Fink* 604 (MIN, det. C.M. Wetmore; TLC [fide C.M. Wetmore]: atranorin, norstictic acid).
- Cladonia cariosa* (Ach.) Sprengel – Locally uncommon on soil over low quartzite outcrop. TLC: atranorin. *Advaita* 12660, 12668 (both KANU).
- Cladonia magyarica* Vainio – Common on soil over low quartzite outcrop. TLC (all specimens except as noted): atranorin, fumarprotocetraric acid. *Advaita* 12661 (KANU), *Vinyard* 4093 (TLC: fumarprotocetraric acid not detected, but specimen in poor condition), 5061 (both Hb. PNM).
- Cladonia pyxidata* (L.) Hoffm. – Abundant on soil over low quartzite outcrops. TLC: fumarprotocetraric acid. *Advaita* 7121 (KANU).
- Cladonia rei* Schaerer – On soil near quartzite outcrop; associated with *C. symphy carpia*. TLC: homosekikaic acid. *Advaita* 15095, 15145, 15147, 15586 (all KANU), *Vinyard* 4126 (Hb. PNM).
- Cladonia robbinsii* A. Evans – Occasional on soil over low, flat quartzite outcrops. TLC: usnic acid, barbatic acid. *Advaita* 7183, 8715, *Ladd* 30992 (all KANU).
- Cladonia subcariosa* Nyl. (syn. *Cladonia polycarpoides* Nyl.) – On soil over rock outcrop. TLC: norstictic acid. *Ladd* 30989, 30990 (KANU), *Vinyard* 1148 (Hb. PNM).
- Cladonia symphy carpia* (Flörke) Fr. – On soil near quartzite outcrop; associated with *C. rei*. TLC: atranorin, ± zeorin, psoromic acid. *Advaita* 12669 (KANU), *Vinyard* 4126 (Hb. PNM, sub *C. rei*).
- **Dermatocarpon arenosaxi* Amtoft – Abundant on quartzite cliffs and flat outcrops, and on thin soil over low flat outcrops. *Advaita* 7107, 7128, 8270, 12671, 12672 (all KANU), *Fink* 615 (MIN), *Ladd* 30993 (KANU), *Vinyard* 2015, 2052, 2173 (all Hb. PNM), *Wheeler* 19546 (MIN). First report for Minnesota, although previous reports of *Dermatocarpon miniatum* (L.) Mann from siliceous substrates may be based on this species.
- Dimelaena oreina* (Ach.) Norman – Abundant on quartzite outcrops. *Advaita* 7112 (KANU), *Fink* 603 (MIN, det. J.W. Sheard as *Rinodina oreina* Ach.), *Vinyard* 2182, 4128 (both Hb. PNM). Populations at PNM are occasionally deficient in usnic acid and have gray thalli.
- Diploschistes muscorum* (Scop.) R. Sant. – Rare, a juvenile parasite of *Cladonia* spp. *Advaita* 7139-A, 15584-A (both KANU), *Vinyard* 1082 (Hb. PNM).
- **Diplotomma subdispersum* (Mig.) Etayo & Breuss (syn. *Buellia subdispersa* Mig.) – Rare, on huge sandstone blocks of abandoned train trestle. *Advaita* 8720 (sub *Caloplaca pratensis*), 15592 (both KANU). Molina et al. (2002) and Helms et al. (2003) provide evidence for the segregation of *Diplotomma* from *Buellia*. For the distinction between *D. subdispersum* and the more common *D. venustum* (Körber) Körber, see Nordin (1999).
- **Endocarpon pallidulum* (Nyl.) Nyl. – Common on thin soil over low, flat quartzite outcrops, and occasional on calcareous gravel. *Advaita* 7125, 7129-C, 7184 (all KANU), *Fink* 616 (*Endocarpon* cf. *pallidulum*, but specimen poor; det. by Fink as *E. pusillum* var. *garovaglii* (Mont.) Willey), *Ladd* 31006 (KANU). First report for Minnesota, although previous reports of *Endocarpon pusillum* Hedwig may be based on this species. For the distinction between *E. pallidulum* and *E. petrolepideum*, see Lendemer (2007).
- Endocarpon petrolepideum* (Nyl.) Hasse – Somewhat common, on massive concrete slab in shallow ravine. *Advaita* 15149 (KANU).
- *#*Enterographa osagensis* C.A. Morse – Parasitic on thalli of *Bacidina delicata* on mossy vertical N face of low Sioux Quartzite outcrop and quartzite quarry tailings in shaded dry creek bed. *Advaita* 7173-B, 15159-B (both KANU). This species, which was reported by Morse (2013) to occur only to about 40°N latitude, is here reported for the first time from Minnesota (this specimen), Nebraska [Nemaha Co.: Morse et al. 24857 (KANU)], and South Dakota [Grant Co.: *Ladd* 30960 (KANU, Hb. Ladd)].
- Flavoparmelia baltimorensis* (Gyelnik & Fóris) Hale – Rare, on a pine log imported from boreal forests in northeastern Minnesota for use in the annual Sundance ceremonies. *Advaita* 8705 (KANU).

- Historic collections are from rocks, *Manzel s.n.* (MIN, det. M.E. Hale), and from elm and oak along Sioux Quartzite outcrops, *Vinyard 1158* (Hb. PNM).
- Flavopunctelia flaventior* (Stirton) Hale – Rare, on a weathered wooden fence rail. *Advaita 8697* (KANU).
- Flavopunctelia soledica* (Nyl.) Hale – Rare, on wooden fence rail. *Advaita 15155* (KANU).
- Halecania* sp. 1 – Somewhat common, on shaded quartzite. *Advaita 15140*, *Ladd 31002b* (both KANU).
Thallus tan to olive green, areolate; vegetative diaspores absent; apothecia semi-immersed to sessile, with thalline margins concolorous with the thallus and disks pale orange to dark reddish brown to black; asci *Catillaria*-type; ascospores ca. $9\text{--}15 \times 4\text{--}6 \mu\text{m}$, perispore poorly developed or to ca. $1.5 \mu\text{m}$ thick; conidia not observed. TLC: argopsin. This species has been collected rather frequently from the sheltered face of siliceous rocks in the northern Great Plains. It may be conspecific with *H. "rheophila"* of Harris and Ladd (2005), and is currently under study.
- Hyperphyscia confusa* Essl., C.A. Morse & S. Leavitt – Common on boles of hardwoods. *Advaita 4323-A*, *8681* (both KANU, det. T.L. Esslinger).
- Hyperphyscia syncolla* (Tuck. ex Nyl.) Kalb – Common on hardwoods. *Advaita 7145-A* (KANU), *Vinyard 2108* (Hb. PNM).
- Imshaugia aleurites* (Ach.) S.F. Meyer – A single historic record on rock outcrop in open woodland. *Vinyard 2064* (Hb. PNM). This record appears to be suspect and is included in the list of accepted taxa only tentatively. *Imshaugia aleurites* is otherwise known in Minnesota only from the Northern Minnesota Wetlands and Northern Lakes and Forests ecoregions (Omernik & Griffith 2008), north of about 47°N latitude (Brodo et al. 2001). The species has been documented with certainty for the Great Plains only from the Black Hills (Wetmore 1967).
- Lecanora allophana* Nyl. – Rare, on cottonwood boles. TLC: atranorin. *Advaita 8678*, *12664* (both KANU). Both specimens are solediate and lack apothecia, which is typical of material from the Great Plains.
- Lecanora dispersa* (Pers.) Sommerf. [*Myriolecis dispersa* (Pers.) Šliwa, Zhao Xin & Lumbsch] – Abundant on calcareous substrates; also common on quartzite. *Advaita 7171*, *7193*, *7200-A*, *7200-B* (all KANU).
- Lecanora hagenii* (Ach.) Ach. [*Myriolecis hagenii* (Ach.) Šliwa, Zhao Xin & Lumbsch] – Rare, on bark of exposed hackberry roots. *Advaita 15146* (KANU).
- Lecanora meridionalis* H. Magn. – Rare, on a wooden fence rail. TLC: atranorin, roccellic acid. *Advaita 15153* (KANU). KANU specimens of *L. meridionalis* from the Great Plains all appear to lack gangeloidin. This is evidently unusual in material from eastern North America (Brodo 1984), but also true of specimens from the Sonoran region (Ryan et al. 2004) as well as type collection (Brodo 1984).
- Lecanora muralis* (Schaerer) Rabenh. [*Protoparmeliopsis muralis* (Rabenh.) Choisy] – Occasional on low, flat outcrops. TLC: usnic acid, zeorin, leucotylin. *Advaita 7140* (KANU), *Fink 638* (MIN, det. B.D. Ryan).
- Lecanora opiniconensis* Brodo [*Rhizoplaca opiniconensis* (Brodo) Leavitt, Zhao Xin & Lumbsch] – Common on flat, low quartzite outcrops. TLC (all specimens): usnic acid, placodiolic acid, 1–2 unknown terpenoids. *Advaita 7132-A*, *8685* (both KANU), *Fink 599*, *642* (both MIN, det. B.D. Ryan), *Vinyard 1081* (Hb. PNM).
- Lecanora saligna* (Schrader) Zahlbr. – Occasional on weathered fence rails. *Advaita 8688* (KANU).
- Lecanora sambuci* (Pers.) Nyl. [*Myriolecis sambuci* (Pers.) Clem.] – Rare; on bole of mature cottonwood. *Advaita 8678-B* (KANU).
- Lecanora strobilina* (Spreng.) Kieffer – Uncommon on weathered fence rails. *Advaita 8693*, *8694* (both KANU).
- Lecanora subintricata* (Nyl.) Th. Fr. – Rare; on bole of bur oak. *Advaita 7145-B* (KANU).
- Lecanora symmicta* (Ach.) Ach. – Rare on wooden fence posts. *Advaita 15157* (TLC: usnic acid, zeorin), *15582* (both KANU).
- Lecidea tessellata* Flörke – Known from a single collection from a quartzite outcrop in a woodland area. TLC: confluent acid (major), 2'-O-methylmicrophyllinic acid (minor). *Vinyard 2082* (Hb. PNM).
- Lecidea turgidula* Fr. *vel aff.* – Collected once on partly shaded wooden fence rail. TLC: no substances detected. *Advaita 8696* (KANU). This species is evidently rare in the Great Plains outside of the Black Hills, where it was collected a number of times by C.M. Wetmore (Wetmore 1967). Elsewhere, it has been documented in the region from Kansas [Hamilton Co., on fiberboard affixed to fence, *Morse 16126b* (KANU)] and Nebraska [Cuming Co., West Point, *Bruner 76*

- (NEB, *n.v.*)]. Our material conforms reasonably well with the description of this species by Aptroot et al. (2009), but differs in having slightly larger conidia ($4.6\text{--}5.4 \times 1.8\text{--}2.4 \mu\text{m}$ vs. $3\text{--}3.5 \times 1.5\text{--}1.8 \mu\text{m}$ fide Aptroot et al. 2009) and in lacking placodialic acid. The specimens are small, however, and our failure to detect secondary metabolites may be due to the amount of material available for sampling.
- Lecidella carpathica*** Körber – Occasional on low, flat quartzite outcrops. *Advaita* 7118, 7132-B, 8722 (all KANU), *Vinyard* 4072 (Hb. PNM).
- Lecidella elaeochroma*** (Ach.) M. Choisy – Rare, on bole of mature cottonwood. *Advaita* 8684, 15158 (both KANU).
- Lecidella stigmatea*** (Ach.) Hertel & Leuckert – Occasional on shaded quartzite fragments in seasonal creek bed, and on mortar of a footbridge. *Advaita* 7163, 7192 (both KANU), *Fink* 612 (MIN, det. C.M. Wetmore).
- Lepraria finkii*** (B. de Lesd.) R.C. Harris – Uncommon on partly shaded, sheer vertical face of quartzite cliffs; also on bur oak near falls and on a soft decaying wood stump. TLC (all specimens except as noted): atranorin, zeorin, stictic acid aggregate, unknown dibenzofurans. *Advaita* 4336 (det. J.C. Lendemer as *L. lobificans* Nyl., TLC: dibenzofurans not detected), 7199, 7156-B (TLC: dibenzofurans not detected), 12656, 12657, *Ladd* 30981 (all KANU). Previous reports of *Lepraria lobificans* Nyl. for Minnesota likely belong to this species. See Lendemer (2013) for discussion.
- #*Lichenodiplis lecanorae*** (Vouaux) Dyko & D. Hawksw. *vel aff.* – On apothecia of *Caloplaca pyracea* and *C. holocarpa*. *Advaita* 7106 (sub *Arthrosporum populorum*), 7200-A (sub *Lecanora dispersa*), 15106-B (sub *C. pyracea*) (all KANU). Conidia are ca. $6.5\text{--}10 \times 2.5\text{--}3.5 \mu\text{m}$, somewhat larger than reported by Diederich (2004) for *Lichenodiplis lecanorae* ($4\text{--}7.5 \times 2\text{--}3 \mu\text{m}$).
- Lichinaceae, genus 1** – Uncommon on exposed quartzite. *Advaita* 7129-A, 7129-B (both KANU). Thallus minutely fruticose, sterile.
- Lichinaceae, genus 2** – On seepage tracks of quartzite outcrops. *Advaita* 7135-A (KANU, sub *Rinodina siouxiana*). Thallus crustose; hymenium KI-; ascospores 8 per ascus, hyaline, simple, ca. $6.5\text{--}9 \times 4.5\text{--}5 \mu\text{m}$.
- Montanelia tominii*** (Oxner) Divakar A. Crespo, Wedin & Essl. (syn. *Melanelia tominii* (Oksner) Essl.) – Rare; one modern collection from exposed quartzite fragments above the cliffs. TLC (all specimens): gyrophoric acid, ovoic acid. *Advaita* 4337 (KANU), *Fink* 594, 621, 643 (all MIN, det. T.L. Esslinger as *Melanelia tominii*).
- Parmelia sulcata*** Taylor – Rare, on wood of a soft decaying decorticate stump. *Advaita* 7156-A (KANU).
- Parmotrema reticulatum*** (Taylor) M. Choisy – On oak and elm. *Vinyard* 2077 (Hb. PNM).
- Peltigera didactyla*** (With.) J.R. Laundon – Rare, on soil over low quartzite outcrop. *Advaita* 7142 (KANU).
- Peltigera lepidophora*** (Nyl.) Bitter – Rare, on soil over low quartzite outcrop. *Advaita* 7179 (KANU).
- Peltigera polydactyla*** (Necker) Hoffm. – On soil and humus over rock outcrop in woodland area. *Vinyard* 1105 (Hb. PNM).
- Peltigera rufescens sensu lato*** (material insufficient for positive determination) – On rock outcrops, soil, and humus in open woods. *Vinyard* 1093, 1098, 2095 (all Hb. PNM).
- Peltula euploca*** (Ach.) Poelt ex Ozenda & Clauzade – Uncommon, on massive vertical quartzite wall. *Advaita* 15142, *Ladd* 30994, 30999 (all KANU).
- Phaeophyscia adiastrum*** (Essl.) Essl. – Abundant on shaded quartzite fragments, boulders, and outcrops. *Advaita* 4325, 4331, 7162, *Ladd* 30987 (all KANU).
- Phaeophyscia ciliata*** (Hoffm.) Moberg – Occasional on boles of box elder and branches of American plum. *Advaita* 4324-B (det. T.L. Esslinger), 15106-A (both KANU).
- Phaeophyscia hirsuta*** (Mereschk.) Essl. – Common on hardwood boles and quartzite cliffs. *Advaita* 4324-A (KANU), *Vinyard* 2099 (Hb. PNM).
- Phaeophyscia nigricans*** (Flörke) Moberg – Common on vertical side of concrete bridge. *Advaita* 12665, 15097 (both KANU).
- Phaeophyscia orbicularis*** (Necker) Moberg – Occasional on massive shaded Sioux Quartzite fragments. *Advaita* 15144 (KANU).
- Phaeophyscia pusilloides*** (Zahlbr.) Essl. – Rare, on bole of mature bur oak. *Advaita* 4314-B (KANU).
- Phaeophyscia sciastra*** (Ach.) Moberg – Uncommon on runoff zone over low, flat quartzite outcrops. *Advaita* 4320 (det. T.L. Esslinger), 7143 (both KANU), *Fink* 618 (MIN, det. C.M. Wetmore).

- Physcia adscendens* (Fr.) H. Olivier – Uncommon on weathered fence rail. *Advaita* 8691 (KANU), *Vinyard* 2029 (Hb. PNM).
- Physcia aipolia* (Ehrh. ex Humb.) Fűrnr. – Rare, on boles of bur oak. *Advaita* 7195, 15101 (both KANU).
- Physcia biziana* (A. Massal.) Zahlbr. – Occasional on boles of mature cottonwoods. *Advaita* 8683 (KANU).
- Physcia caesia* (Hoffm.) Fűrnr. – Abundant on quartzite outcrops, fragments, and quarry tailings. *Advaita* 4328, 4334 (both KANU).
- Physcia dakotensis* Essl. – Abundant on quartzite outcrops. *Advaita* 4193 (KANU [paratype], det. T.L. Esslinger).
- Physcia dubia* (Hoffm.) Lettau – Occasional on low quartzite outcrops and quarry tailings. *Advaita* 7117, 7123-B (KANU), *Vinyard* 6011 (Hb. PNM).
- Physcia halei* J.W. Thomson – Common on quartzite outcrops. *Advaita* 7114 (KANU), *Fink* 601, 624 (det. C.M. Wetmore) (both MIN), *Ladd* 30998 (KANU).
- Physcia millegrana* Degel – On box elder and elm. *Vinyard* 2087 (Hb. PNM, sub *Punctelia bolliana*).
- Physcia phaea* (Tuck.) J.W. Thompson – Uncommon on shaded quartzite boulders. *Advaita* 7149, *Ladd* 30998 (both KANU).
- Physcia stellaris* (L.) Nyl. – Dominant on branches of hardwood trees and shrubs. *Advaita* 4315, 15098 (both KANU), *Vinyard* 1139, 2049 (both Hb. PNM).
- Physcia subtilis* Degel. – Dominant on quartzite outcrops; the most common and widely distributed saxicolous lichen at PNM. *Advaita* 7109, 15162 (both KANU), *Fink* 634 (MIN), *Vinyard* 2142, 6019 (both Hb. PNM).
- Physciella chloantha* (Ach.) Ellis – Abundant on boles of hardwoods and on massive quartzite exposures. *Advaita* 4322, 7165 (both KANU).
- Physciella melanchra* (Hue) Essl. – Dominant on boles of hardwoods; abundant on shaded quartzite fragments. *Advaita* 4321, 7166, 8680-B (all KANU), *Vinyard* 1084, 2102 (both Hb. PNM).
- Physconia leucoleiptes* (Tuck.) Essl. – Rare; on massive, sloping quartzite face in vicinity of waterfall. *Advaita* 4327 (KANU).
- Placidium squamulosum* (Ach.) Breuss – Uncommon on thin soil over low quartzite outcrops. *Advaita* 7144-A (KANU).
- Polyblastia cupularis* A. Massal. – Rare, on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita* 8724, 15598 (both KANU).
- **Pseudosagedia chlorotica* (Ach.) Hafellner & Kalb. – On quartzite. *Ladd* 31002a (KANU). *Pseudosagedia chlorotica* has previously been collected in the Great Plains in Oklahoma [Comanche Co., *Morse* 20473a (KANU); Osage Co., *Morse & Ladd* 14682b (KANU)]. The species appears to be rare in the region, where it is likely limited by the scarcity of appropriate habitat. Despite intensive field work, it has not been discovered in the adjacent Ozark Highlands (Harris & Ladd 2005). First reports for Minnesota and Oklahoma.
- **Psoroglaena dictyospora* (A. Orange) Harada – Rare, on the lower bole of a mature bur oak and on litterfall. *Advaita* 7197-B, 15139-B (both KANU). This species was reported new to North America by Will-Wolf (1998), based on specimens collected in Badlands National Park, South Dakota. It has subsequently been collected in scattered localities throughout the Great Plains and eastern United States (CNALH 2016, CAM unpublished data) and is likely more common than collection records would suggest.
- Punctelia bolliana* (Müll. Arg.) Krog – Uncommon, two recent collections from bur oak near waterfall. *Advaita* 12655, *Ladd* 31010 (both KANU), *Vinyard* 1159, 2079, 2087 (all Hb. PNM).
- **Punctelia missouriensis* G. Wilh. & Ladd – Single collection from oak tree. *Vinyard* 2075 (Hb. PNM).
- Punctelia rudecta* (Ach.) Krog – Uncommon on massive vertical quartzite wall. *Advaita* 7198-A (KANU).
- Ramalina culbersoniorum* LaGreca – Rare, on weathered fence rails. *Advaita* 8689 (TLC: divaricatic acid), 15583 (TLC: no substances detected) (both KANU). *Advaita* 15583 may be referred to the largely sympatric *R. americana* Hale (LaGreca 1999). However, the specimen is very small, and it cannot be ruled out that the failure to detect secondary metabolites is due to the paucity of material available for sampling.
- Ramalina intermedia* (Delise ex Nyl.) Nyl. – A single historic record; TLC: usnic acid, homosekikaic acid. *Fink* 641 (MIN, det. C.M. Wetmore). Fink's collection label reads "on large granite boulder," and the substrate was recorded as "a large bowlder [sic]" in Fink (1902). We assume that the substrate cited on Fink's label is merely an error in recording, as there are no granite boulders present at

- PNM. The first author has found *R. intermedia* on shaded vertical Sioux Quartzite cliffs in southeast South Dakota, ca 39 km southwest of PNM [Minnehaha Co., *Advaita* 3487, 7627 (KANU)].
- Rhizocarpon disporum*** (Nägeli ex Hepp) Müll. Arg. – Abundant on quartzite boulders and outcrops. *Advaita* 7111 (KANU), *Fink* 620, 693 (both MIN, det. C.M. Wetmore), *Vinyard* 3088 (Hb. PNM).
- Rhizoplaca chrysoleuca*** (Sm.) Zopf *sensu lato*. – Common on slanting faces of large quartzite boulders. *Advaita* 7110, 12662 (TLC: usnic acid, pseudoplacodiolic acid, unknown) (both KANU), *Fink* 617, 644 (both MIN, det. B.D. Ryan as *Rhizoplaca* cf. *subdiscrepans*), *Vinyard* 2205 (TLC: usnic acid, pseudoplacodiolic acid, psoromic acid), 3031 (TLC: usnic acid, pseudoplacodiolic acid, unknown, psoromic acid) (both Hb. PNM), *Wheeler* 19554 (MIN, TLC: usnic acid, pseudoplacodiolic acid, unknown). Specimens from the northeastern Great Plains appear to be somewhat intermediate between typical *R. chrysoleuca* and *R. subdiscrepans* (Nyl.) R. Sant., comprising thalli that range from crustose to subumbilicate, with a very narrow lower cortex and oblong holdfasts. Consequently, they are here referred to *R. chrysoleuca sensu lato*. For further discussion of this entity, including its unusual chemistry, see Brodo (1986).
- Rinodina cana*** (Arnold) Arnold – Uncommon, on quartzite fragments in runoff zone on low quartzite outcrops. *Advaita* 7123-C, 15141 (both KANU), *Vinyard* 2041 (Hb. PNM, sub *Caloplaca subsoluta*).
- Rinodina castanomelodes*** Mayrhofer & Poelt – Uncommon on flat top of massive calcareous sandstone blocks from abandoned train trestle. *Advaita* 8716, 15596 (both KANU).
- Rinodina destituta*** (Nyl.) Zahlbr. – Rare, on small rock fragment in moist drainage area over low quartzite outcrops. *Advaita* 7123-A (KANU).
- Rinodina freyi*** H. Magn. – Rare, on weathered fence rail. *Advaita* 8690, 8693 (sub *Lecanora strobilina*) (both KANU).
- Rinodina populicola*** H. Magn. – Uncommon on branches of American plum. *Advaita* 7161-B, 8700 (both KANU).
- Rinodina pyrina*** (Ach.) Arnold – Occasional on small branches of green ash and American plum; also on wooden fence. *Advaita* 7146, 7161-A, 8686, 12653, 15105-A, *Ladd* 31009 (all KANU).
- Rinodina siouxiana*** Sheard – Common on vertical quartzite cliffs; occasional on low, flat outcrops. *Advaita* 7115, 7135-A, 7141, 7167-B, 15143 (all KANU), *Fink* 632 (MIN).
- Sarcogyne regularis*** Körber – Rare, collected once on thin calcareous film over surface of exposed quartzite boulder. *Advaita* 7189-A (KANU).
- Scoliciosporum umbrinum*** (Ach.) Arnold – Collected only as admixtures on quartzite outcrops. *Advaita* 7176-B (KANU), *Vinyard* 3088 (Hb. PNM, sub *Rhizocarpon disporum*).
- Staurothele areolata*** (Ach.) Lettau – Abundant on mortar, calcareous gravel, and low, flat, often-inundated quartzite. *Advaita* 7127-B, 7191, 15152, *Ladd* 30985, 30986 (all KANU).
- Staurothele drummondii*** (Tuck.) Tuck. – Common on calcareous gravel over ground-level quartzite outcrops. *Advaita* 7181-B, 15150 (both KANU), *Fink* 595, 619, 622, 628 (all MIN, det. J.W. Thomson), *Ladd* 31005 (KANU).
- Staurothele fissa*** (Taylor) Zwackh – A single historic record; on quartzite. *Fink* 635 (MIN, det. J.W. Thomson).
- Staurothele monicae*** (Zahlbr.) Wetmore – Uncommon on mortar and quartzite flagstones of foot-bridge. *Advaita* 7191-B (KANU).
- #*Stigmatidium* sp. 1** – On *Endocarpon pallidulum*. *Advaita* 12673-A (KANU). Perithecia ca. 0.1 mm diam.; periphyses present; hamathecium KI+ pale blue; asci KI-; ascospores ca. 8/ascus, hyaline, 1-septate, narrowly clavate, 14.5–18 × 4.5–5.5 µm.
- Strigula americana*** R.C. Harris *vel aff.* – Rare, on bark of exposed roots of green ash near creek. *Advaita* 15135-B (KANU, conf. J.C. Lendemer). Ascospores in this specimen and another from Kansas [Leavenworth Co., *Morse* 16473a (KANU, conf. J.C. Lendemer)] resemble those of *S. americana* in shape; however, they are larger (24.2–38.1 × 4.7–8.4 µm vs. 17–27 × 4–5.5 µm fide Harris 1995), biguttulate or occasionally with 3 fine septa, often somewhat lunate in outline and with unequal, flask-shaped cells.
- Strigula jamesii*** (Swinscow) R.C. Harris – Rare, on mossy base of green ash by waterfall. *Advaita* 15137-B (KANU).
- Teloschistes chrysophthalmus*** (L.) Th. Fr. – Common on small exposed branches of green ash and American plum. *Advaita* 7157, 15093 (both KANU), *Vinyard* 1145 (Hb. PNM).

- **Verrucaria calkinsiana* Servít – Uncommon on shaded block of concrete at old dam site. *Advaita* 7185 (KANU). First report for Minnesota, although previous reports of *V. muralis* Ach. may be based on this species.
- **Verrucaria furfuracea* (de Lesd.) Breuss – Occasional on shaded block of concrete near old dam site, and on calcareous gravel. *Advaita* 7181-C, 8723, 15589 (sub *Verrucaria* sp. 1) (all KANU).
- Verrucaria nigrescens* Pers. – Rare, on rock fragment in moist drainage area over low quartzite outcrop, and on shaded concrete at old dam site. *Advaita* 7124-B, 7185-B (both KANU).
- **Verrucaria sphaerospora* Anzi – Uncommon on exposed sloping surfaces of large quartzite boulders. *Advaita* 7119-A, 7119-C, 8707 (all KANU), *Vinyard* 3088 (sub *Rhizocarpon disporum*), 4072 (sub *Lecidella carpathica*) (both Hb. PNM).
- Verrucaria* sp. 1 – Somewhat uncommon on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita* 8718, 8721, 8725, 15587, 15589, 15593, 15594, 15599, 15600 (all KANU). *Verrucaria* sp. 1 resembles *Verrucaria fuscella* (Turner) Winch (= *Placopyrenium fuscillum* (Turner) Gueidan & Cl. Roux), with finely pruinose areoles divided by black lines and with a dark basal layer, but with larger ascospores (12–)15.5–20.5(–22) × (3–)6–10(–11) µm vs. 11–15 × 5–6.5 µm fide Breuss 2007).
- Verrucaria* sp. 2 – Occasional on quartzite. *Advaita* 8271 (KANU). Thallus olive green, comprised of verrucose areoles; perithecia 1 per areole, ca. 130 µm in diameter; involucrellum extending 1/3 of the way to the base of the perithecium; ascospores 11–16 × 4.5–6 µm.
- Verrucaria* sp. 3 – On small quartzite fragments scattered over outcrop seepage track, and on north face of quartzite cliff near waterfall. *Advaita* 7124-B, 15160 (KANU). Thallus greyish brown, rimose-areolate; perithecia immersed, 1 per areolate, ca. 160 ascospores µm in diameter; 13–16 (20) × (7)8–9 µm.
- Verrucaria* sp. 4. – On calcareous sandstone blocks of abandoned train trestle. *Advaita* 15597, 15602 (both KANU). Thallus brown; medulla pale; exciple brown above, pale below; ascospores 17–22 (25) × 6–8 µm.
- Xanthomendoza fallax* (Hepp) Søchting, Kärnefelt & S.Y. Kondr. – Dominant on boles of hardwoods; common on shaded and exposed quartzite. *Advaita* 4313 (KANU), *Vinyard* 1124, 1155, 2028, 2202 (all Hb. PNM).
- Xanthomendoza hasseana* (Räsänen) Søchting, Kärnefelt & S.Y. Kondr. – Common on exposed small branches of hardwoods, including American plum. *Advaita* 4318, 15092 (both KANU).
- Xanthomendoza ulophyllodes* (Räsänen) Søchting, Kärnefelt & S.Y. Kondr. – Occasional on sloping face of massive quartzite cliff. *Advaita* 4326 (KANU).
- Xanthomendoza weberi* (S. Kondr. & Kärnefelt) L. Lindblom – Abundant on boles of hardwoods and on quartzite walls and fragments. *Advaita* 4314-A (KANU), *Vinyard* 2096 (Hb. PNM).
- Xanthoparmelia lineola* (E.C. Berry) Hale – Rare; on low, flat quartzite outcrop. TLC: usnic acid, unknown, trace norstictic acid, salazinic acid aggregate. *Advaita* 8714 (KANU).
- Xanthoparmelia mexicana* (Gyelnik) Hale – Common on low, flat quartzite outcrops. TLC (all specimens): usnic acid, norstictic acid (minor or trace), salazinic acid (major), ±consalazinic acid. *Advaita* 7108, 7130, 7138-A, 7138-B, 12658 (all KANU), *Fink* 589 (MIN, insufficient for TLC, but salazinic acid present, fide M.E. Hale), *Vinyard* 1134, 2044, 2051, 4091 (all Hb. PNM), *Wheeler* 19556 (MIN). The lower cortex of some of these specimens is distinctly brown (though not black), which appears to be atypical for *X. mexicana* elsewhere in the Great Plains.
- Xanthoparmelia viriduloumbrina* (Gyelnik) Lendemer – Uncommon on low, flat quartzite outcrops. TLC (except as noted): usnic acid, norstictic acid, salazinic acid aggregate. *Advaita* 15096 (KANU), *Fink* 637 (MIN, insufficient for TLC, but salazinic acid present, fide M.E. Hale), *Vinyard* 1072 (Hb. PNM). We are uncertain about the separation of *X. viriduloumbrina* from *X. coloradoënsis* (Gyelnik) Hale in the northern Great Plains. Consequently, these specimens are referred here to *X. viriduloumbrina* somewhat tentatively.
- Xanthoria elegans* (Link) Th. Fr. Common on shaded quartzite tailings in seasonal creek bed; occasional on vertical quartzite cliff. *Advaita* 4335 (KANU), *Fink* 592, 603 (both MIN), *Vinyard* 3052 (Hb. PNM).

SYNONYMS AND DOUBTFUL OR EXCLUDED SPECIES

Below is a full account of all synonyms as well as doubtful and excluded species reported for Pipestone National Monument by earlier authors (Fink 1902, Willson & Vinyard 1986), based on our revision of 37 vouchers deposited by B. Fink in MIN and 65 vouchers deposited by T. Vinyard in Hb. PNM. .

- Acarospora chlorophana* (Wahlenb.) A. Massal. (= *Pleopsidium chlorophanum* (Wahlenb.) Zopf). Reported by Willson and Vinyard (1986), but the specimen is *A. contigua*.
- Aspicilia caesiocinerea* (Nyl. ex Malbr.) Arnold (= *Circinaria caesiocinerea* (Nyl. ex Malbr.) A. Nordin). Reported by Willson and Vinyard (1986). We were unable to locate a voucher for this report.
- Bacidia rubella* (Hoffm.) A. Massal. Reported by Willson and Vinyard (1986), but the specimen is *Amandinea polyspora* (with admixtures of *A. dakotensis* and *Chrysothrix caesia*).
- Biatora muscorum* Hepp = *Bacidia bagliettoana*.
- Buellia nigra* (Fink) Sheard. Reported by Wheeler (1999) from Pipestone Co., but the specimens are *B. badia* (PNM, Wheeler 19544 [MIN]) and *B. tyrolensis* (Hiawatha State Game Refuge, Wheeler 19614 [MIN]). We have examined the majority of the voucher specimens cited by Wheeler (1999) as *B. nigra* for Minnesota and South Dakota, and found none to include material referable to a member of the *B. aethelea* group, since all specimens examined have a dark brown hypothecium. Indeed, they all appear to us to belong to either *B. badia* or *B. tyrolensis*.
- Buellia petraea* (Wulfen) V. Branth. & Rostr. var. *montagnei* (Flot.) Tuck. (? = *Rhizocarpon petraeum* (Wulfen) A. Massal.). Reported by Fink (1902), but the specimens are *Rhizocarpon disporum*.
- Buellia pullata* Tuck. Reported by Fink (1902), but the specimen is *B. tyrolensis*.
- Buellia spuria* (Schaerer) Anzi. Reported by Fink (1902), but the specimen is *Lecidella stigmataea*.
- Caloplaca cinnabarina* (Ach.) Zahlbr. Reported by Fink (1902, as *Placodium cinnabarinum*) and Willson and Vinyard (1986), but the specimens are *C. subsoluta*.
- Cladonia chlorophaea* (Flörke ex Sommerf.) Sprengel. Reported by Willson and Vinyard (1986), but the specimen is *C. magyarica*.
- Cladonia fimbriata* (L.) Fr. Reported by Fink (1902), but the specimen is *C. acuminata*.
- Cladonia fimbriata* var. *tubaeformis* (Hoffm.) Fr. Reported by Fink (1902). We were unable to locate a voucher for this report.
- Cladonia polycarpoides* Nyl. = *C. subcariosa*.
- Collema flaccidum* (Ach.) Ach. Reported by Willson and Vinyard (1986), but the specimen (Vinyard 4095 [hb. PNM]) is a non-lichenized, terricolous cyanobacterium.
- Dermatocarpon fluviatile* (Weber) Th. Fr. (= *D. luridum* (With.) J. R. Laundon). Reported by Willson and Vinyard (1986), but the specimen is *D. arenosaxi*.
- Dermatocarpon lachneum* (Ach.) A. L. Sm. (= *Placidium lachneum* (Ach.) B. de Lesd.). Reported by Willson and Vinyard (1986). The specimen is in poor condition, but appears to be referable to *D. arenosaxi*.
- Dermatocarpon miniatum* (L.) W. Mann. Reported by Willson and Vinyard (1986), but the specimen is *D. arenosaxi*.
- Diploschistes scruposus* (Schreber) Norman. Reported by Fink (1902) as *Urceolaria scruposa*, and by Willson and Vinyard (1986). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. muscorum* (CNALH 2016). The voucher collected by Vinyard is *D. muscorum*.
- Endocarpon hepaticum* Ach. (? = *Placidium lacinulatum* (Ach.) Breuss). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *P. squamulosum* (CNALH 2016).
- Endocarpon miniatum* (L.) Gaertn. (= *Dermatocarpon miniatum*). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. miniatum* (CNALH 2016). However, appropriate, calcareous substrate is largely absent from PNM and all Minnesota specimens originally determined as *D. miniatum* that we have examined have turned out to be *D. arenosaxi*. We expect that this collection should also be referred to *D. arenosaxi*.
- Endocarpon miniatum* var. *complicatum* (Lightf.) Schaer. (? = *Dermatocarpon miniatum*). Reported by Fink (1902), but the specimen is *D. arenosaxi*.

Endocarpon pusillum Hedwig. Reported by Fink (1902) as *E. pusillum* var. *garovaglii* (Mont.) Willey, and by Willson and Vinyard (1986). The voucher collected by Fink is in poor condition, but appears to be referable to *E. pallidulum*. We were unable to locate the voucher collected by Vinyard.

Heterodermia hypoleuca (Muhl.) Trevisan. Reported by Willson and Vinyard (1986), but the specimen is *Punctelia bolliana*.

Lecanora cinerea (L.) Sommerf. (= *Aspicilia cinerea*). Reported by Fink (1902), but the specimen (Fink 625 [MIN]) is *Aspicilia americana*. A second specimen deposited in MIN (Fink 633), originally determined by Fink as *L. cinerea* and later redetermined as *A. caesiocinerea*, was not available for review. The presence of *Aspicilia cinerea* at PNM was established by later collections.

Lecanora muralis var. *saxicola* Schaer. = *L. muralis*.

Lecanora rubina (Vill.) Ach. = *Rhizoplaca chrysoleuca*.

Lecanora rubina var. *heteromorpha* Ach. (= *Lecanora heteromorpha* (Ach.) J. Steiner). Reported by Fink (1902), but the specimen is *L. opiniconensis*.

Lecanora xanthophana Nyl. (= *Acarospora xanthophana* (Nyl.) Jatta). Reported by Fink (1902), but the specimens are *A. contigua*.

Letharia vulpina (L.) Hue – On oak in open elm-oak woodland. Vinyard 1075 (Hb. PNM). The specimen was determined by the collector as *Ramalina intermedia* (Delise ex Nyl.) Nyl., and presumably forms the basis of the report by Willson and Vinyard (1986) for that species. As *L. vulpina* is both conspicuous and unknown to occur naturally east of the High Plains, the attribution of this species to PNM is highly suspect, although it is possible that the specimen was collected from the bark of logs imported for cultural uses.

Parmelia conspersa (Ehrh. ex Ach.) Ach. (= *Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale). Reported by Fink (1902), but the specimens are *X. mexicana* (Fink 589) and *X. viriduloumbrina* (Fink 637).

Parmelia bolliana Müll. Arg. = *Punctelia bolliana*.

Parmelia olivacea (L.) Ach. var. *prolixa* (Ach.) Zahlbr. (= *Xanthoparmelia pulla* (Ach.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch). Reported by Fink (1902), but the specimens are *Montanelia tominii*.

Parmelia rudecta Ach. = *Punctelia rudecta*. Reported by Willson and Vinyard (1986), but the specimen is *P. missouriensis*. The presence of *Punctelia rudecta* at PNM was established by later collections.

Parmelia substygia Räsänen = *Montanelia tominii*. Reported by Willson and Vinyard (1986), but the specimen is *Peltigera rufescens sensu lato*. The presence of *Montanelia tominii* at PNM was established by other collections.

Parmelina galbina (Ach.) Hale (= *Myelochroa galbina* (Ach.) Elix & Hale). Reported by Willson and Vinyard (1986), but the specimen is *Punctelia bolliana*.

Peltigera canina (L.) Willd. Reported by Willson and Vinyard (1986), but the specimen is poor and only determinable by the authors as *P. rufescens sensu lato*.

Peltigera spuria (Ach.) DC. (= *P. didactyla*). Reported by Willson and Vinyard (1986), based on a specimen referred here to *P. rufescens sensu lato*. The presence of *Peltigera didactyla* at PNM was established by a later collection.

Phaeophyscia endococcina (Körber) Moberg. Reported by Willson and Vinyard (1986), but the specimen is *Dimelaena oreina*.

Physcia americana G. Merr. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza fallax*.

Physcia tenella (Scop.) DC. Reported by Willson and Vinyard (1986), but the specimen is *P. adscendens*.

Physcia chloantha (Ach.) Vainio (= *Physciella chloantha*). Reported by Willson and Vinyard (1986), but the specimen is *Physciella melanchra*. The presence of *Physciella chloantha* at PNM was established by later collections.

Physcia melanchra Hue = *Physciella melanchra*.

Physciopsis syncolla Tuck. ex Nyl. = *Hyperphyscia syncolla*.

Physconia deterosa (Nyl.) Poelt. Reported by Willson and Vinyard (1986), but the specimen is *Parmotrema reticulatum*.

Placodium cerinum (Ehrh.) Naeg. & Hepp. var. *sideritis* Tuck. = *Caloplaca sideritis*.

Placodium cinnabarinum (Ach.) Nyl. (= *Caloplaca cinnabarina*). Reported by Fink (1902), but the specimen is *Caloplaca subsoluta*.

Placodium elegans (Link) DC. = *Xanthoria elegans*.

Placodium vitellinum (Ehrh.) Hepp = *Candelariella vitellina*.

Placynthium nigrum (Hudson) Gray. Reported by Willson and Vinyard (1986), but the specimen is *Aspicilia cinerea*.

Pleopsidium chlorophanum (Wahlenb.) Zopf. Reported (as *Acarospora chlorophana*) by Willson & Vinyard (1986), but the specimen is *A. contigua*.

Pseudoparmelia baltimorensis (Gyelnik & Főriss) Hale = *Flavoparmelia baltimorensis*. Reported by Willson and Vinyard (1986), but the specimen is *Imshaugia aleurites*. The presence of *Flavoparmelia baltimorensis* at PNM was established by other collections.

Pseudoparmelia caperata (L.) Hale (= *Flavoparmelia caperata* (L.) Hale). Reported by Willson and Vinyard (1986), but the specimen is *F. baltimorensis*.

Ramalina polymorpha (Lilj.) Ach. Reported by Fink (1902), but the specimen is *R. intermedia*.

Rhizoplaca melanophthalma (DC.) Leuckert & Poelt. Reported by Willson and Vinyard (1986), but the specimen is *R. chrysoleuca*.

Rinodina oreina (Ach.) A. Massal. = *Dimelaena oreina*.

Rinodina pachysperma H. Magn. Reported by Willson and Vinyard (1986), but the specimen is *R. siouxiana* (with admixtures of *Lecidella carpathica*, *Rhizocarpon disporum*, and *Verrucaria sphaerospora*). Reported by Sheard (2010) on the basis of his own early annotation of Fink 632 (MIN), which is referred herein to *R. siouxiana*. Sheard's report evidently was on oversight, based on taxonomic concepts developed prior to his circumscription of *R. siouxiana*.

Rinodina sophodes (Ach.) A. Massal. var. *tephraspis* (Tuck.) Tuck. (= *Rinodina tephraspis* (Tuck.) Herre). Reported by Fink (1902), but the specimen (Fink 632) is *R. siouxiana*. (See comments on *R. pachysperma* above.)

Staurothele clopima (Wahlenb.) Th. Fr. = *S. drummondii*. Reported by Willson and Vinyard (1986), but the specimen is *Candelariella vitellina*. The presence of *Staurothele drummondii* at PNM was established by other collections.

Staurothele umbrina (Wahlenb.) Hellb. = *S. fissa*.

Urceolaria scruposa (Schreber) Ach. (= *Diploschistes scruposus*). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. muscorum* (CNALH 2016).

Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. viriduloumbrina*.

Xanthoparmelia cumberlandia (Gyelnik) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

Xanthoparmelia plittii (Gyeln.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

Xanthoparmelia taractica (Kremp.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

Xanthoria candelaria (L.) Th. Fr. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza weberi*.

Xanthoria polycarpa (Hoffm.) Th. Fr. ex Rieber. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza fallax*.

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Landfill Lichens: A checklist for Freshkills Park, Staten Island, New York

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ABSTRACT. – A checklist of the lichens discovered at Freshkills Park, Staten Island, after three days of surveying, is presented. In 1997 the Freshkills Municipal landfill was capped and the process to convert it to a park was begun. Seventeen species were found in the park, four of which are newly reported for the New York City metropolitan area. Comparison of our list to previous floras and checklists for New York City suggests that even the densely urbanized area of New York City likely hosts a surprisingly heterogeneous and diverse lichen flora.

KEYWORDS. – Urban ecology, restoration ecology, recolonization.

INTRODUCTION

Lichens are sensitive to air pollution, and systems of using lichens for air quality monitoring, such as those suggested by Hawksworth and Rose (1976), are in widespread use throughout the world (reviewed by: Conti & Cecchetti 2001, Nimis et al. 2002, Szczepaniak & Biziuk 2003), including northeastern North America (Will-Wolf et al. 2015) and the mid-Atlantic region of the United States (Brodo 1966, Will-Wolf et al. 2014). Urban areas generally have very poor air quality, and correspondingly low lichen diversity and abundance (Gries 1999). However, there is evidence that lichens are responding positively to recent improvements in urban air quality in developed countries. For example, in Paris eleven lichen species have recolonized the Jardin du Luxembourg in the past 100 years (Seaward & Letrouit-Galinou 1991). London has also seen considerable returns of lichen diversity and abundance (Davies et al. 2007, Rose & Hawksworth 1981, Larsen et al. 2007). In the United States, research on changes in urban lichen diversity are lacking for most cities, and urban lichen floras are both understudied and the focus of relatively few publications. Thus, many of the changes in urban lichen floras remain as unpublished observations by specialists.

New York City, one of the largest cities in the world, has had relatively little attention paid to its lichen flora when compared with cities like London, Paris and Rome (Larsen et al. 2007, Munzi et al. 2007, Seaward & Letrouit-Galinou 1991). Nonetheless it has had considerably more research attention than most urban areas in the United States. In 1823, 180 species were reported within a 50 mile radius of City Hall, along with a few species from upstate New York and Massachusetts (Halsey 1823). Almost a century later 300 species were reported within a 100 mile radius of city hall, with most of that diversity found in the Palisades of adjacent New Jersey (Woods 1914). In that report, fruticose species such as *Ramalina* and *Cladonia* were reported from Central Park, genera that are now absent from Manhattan (Allen & Howe, unpublished data). Long Island, which includes Brooklyn and Queens, two boroughs of New York City, has received considerably attention, with 279 documented species (Brodo 1968, 2004; Harris 1987; Harris et al. 1987). More recently, 19 species were reported from King and Queens Counties (Delendick 1994), and five species were reported from Highline Park, which is situated in densely urbanized lower Manhattan

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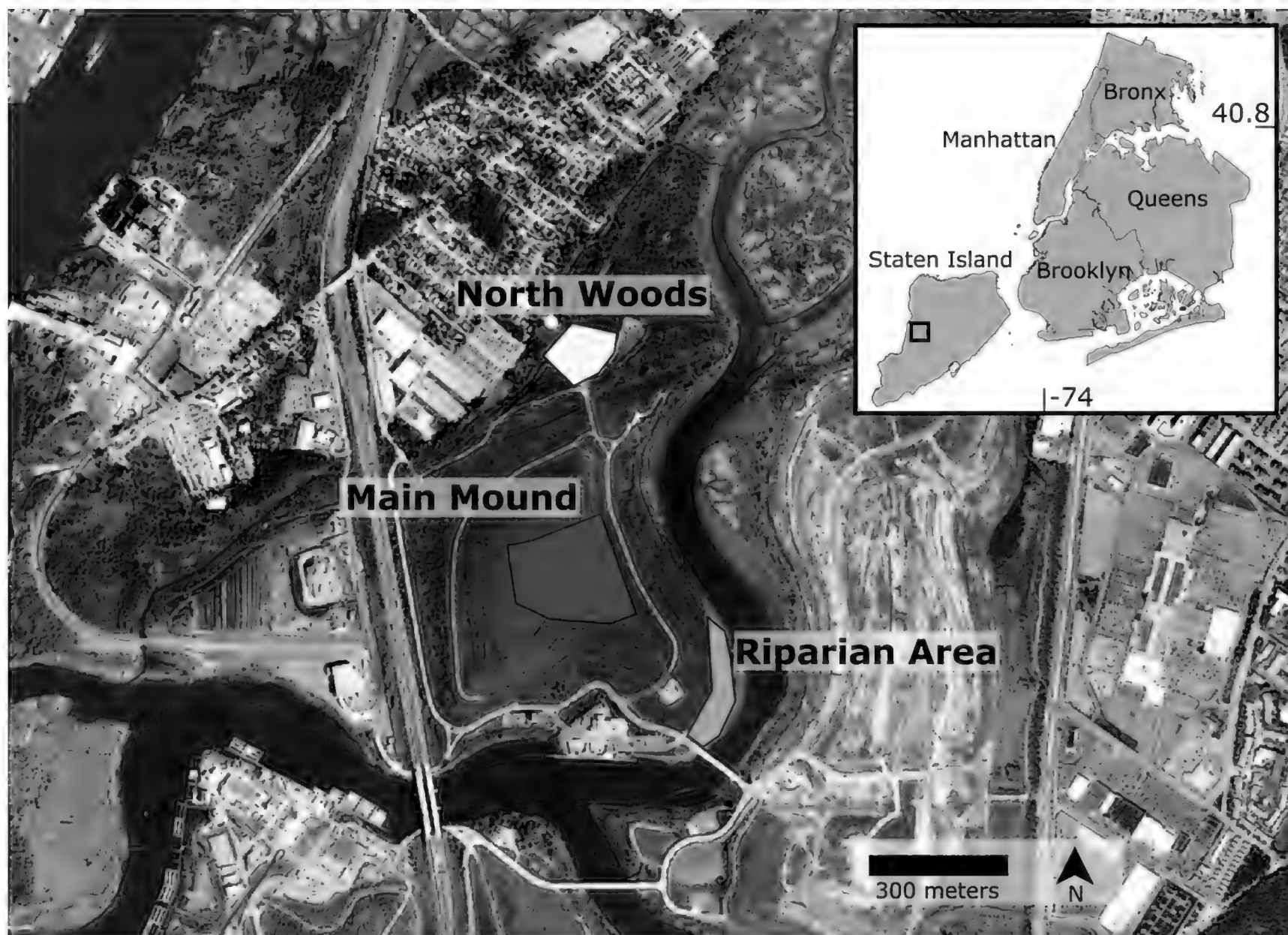


Figure 1. Map of lichen collecting areas at Freshkills Park, North Mound and inset with broader geographic context.

(Stalter 2004). Of the five boroughs, Staten Island has been the least studied, though it has the lowest population density and is now home to Freshkills Park, the largest park in New York City (see below).

Decommissioned (closed) landfills, with new vegetation cover and recently exposed rock substrates, are one example of a novel urban ecosystem type that has been shown to provide habitat for many taxa, including beetles (Do et al. 2014), herbaceous plants (Rahman et al. 2013), butterflies and birds (Camerini & Groppali 2014), and microbial communities that change as the landfill ages (Song et al. 2015). However, decommissioned landfills have not been well studied as habitat for lichens. While there have been studies of lichens near active landfills that show that the surrounding lichens accumulate heavy metals, and their communities simplify (Paoli et al. 2015), the present work presents the first study of lichen colonization of a decommissioned landfill. Freshkills Park, Staten Island, is an engineering and land reclamation marvel (Hirsh 2009). This 8.9 km² park covers what was once Fresh Kills Landfill which was opened in 1948 and had become the largest landfill in the world by 1955 (Hirsh 2009). It reached its peak operation in 1986–1987 when it received 26,000,000 kg of trash per day (Hirsh 2009). Two of the mounds ceased operating and were capped in 1997, and the last delivery to the landfill was in the west mound, where the debris from the World Trade Centers were deposited in 2001 (Hirsh 2009). One portion of the park is now open to the public on special days for recreation. Besides serving as a recreational resource, the large park in this highly developed region could also serve as an ecological resource. Increasing our knowledge of the biodiversity in the park is important to understanding its ecological impact on surrounding areas.

In August 2015 we lead groups of students from Macaulay Honors College of the City University of New York in Manhattan to search for lichens on the North Mound of Freshkills Park. Our lichen foray was part of the Macaulay Honors College Bioblitz, an activity that introduces first year students to field science. We were pleasantly surprised to discover a number of lichen species at the site, so we returned to the park after the Bioblitz to search for additional species. Here we present descriptions of the North Mound from a lichenological perspective, as well as a list of the species discovered throughout the park.

MATERIALS AND METHODS

We spent three days surveying the open portion of the park. Two days were during the Macaulay Honors College Bioblitz, 29-30 August 2015, and the third day the authors explored areas of the park in greater depth with the lead park scientist, Cait Fields. We surveyed the three main areas in the park (Fig. 1). At each site we searched all available substrates and collected a voucher specimen of every species that we found. Vouchers were deposited at The New York Botanical Garden Herbarium (NY). Lichens were identified following standard methods (Brodo et al. 2001) and taxonomy follows Esslinger (2015). Micrographs were taken using a Nikon SMZ1500 microscope fitted with a Nikon DS-Ri7 camera and maps were created in QGIS (QGIS 2016). Figures were prepared using Inkscape (inkscape.com). The following sites were surveyed:

- 1) *Main Mound*—The main mound is the actual capped landfill, which was covered in 1997. A thin layer of soil was added on top of the capping material, which is an impermeable layer of plastic. This area of the park is dominated by grasses, with scattered, young *Robinia pseudoacacia* (black locust) and *Populus deltoides* (cottonwood). No trees were planted in this area, so the few trees are all naturally occurring. The soils at this site are described as Kleinekill silt loam (USDA 2015).
- 2) *North Woods*—North of the mound there is a more densely wooded area. The small section of forest here is dominated by *R. pseudoacacia* with scattered *Prunus serotina* (black cherry). The soils are classified as Secaucus artifactual fine sandy loam with zero to three percent slopes (USDA, 2015)
- 3) *Riparian Zone*—There was a strip of wooded area along the eastern section of the mound bordering the tidal marsh. The dominant tree cover was *R. pseudoacacia*. The soils along the banks of the Main River were Kleinkill silt loam with 15–35% slopes (USDA 2015).

During the Macaulay Honors College Bioblitz, the student participants collected information on cover of crustose, foliose and fruticose lichens using the methodology from the Parks as Classrooms Great Smoky Mountains National Park Schoolyard Lichen Survey. Briefly, transparent sheets were printed with 100 one-centimeter diameter circles arranged in a 10 x 10 grid. Students chose a tree and at chest height on the north, south, east, and west faces of the tree they recorded how many of these circles included crustose, foliose, or fruticose lichens, and converted these values to percent cover. The cover on a total of 13 trees was recorded throughout the study area.

RESULTS

Seventeen species were discovered in Freshkills Park (Table 1; see the Appendix for annotated checklist). The most frequently observed and collected species were *Amandinea polyspora*, *Lecanora strobilina*, and *Physcia millegrana*. We found one calicioid species, *Phaeocalicium polyporaeum*, and a crust, *Verrucaria* cf. *elaeina*, growing on a brick. *Anisomeridium* sp., *Caloplaca subsoluta*, *Phaeophyscia adiastrata*, *Physciella chloantha*, and *Verrucaria* cf. *elaeina* are newly reported for New York City.

Students who participated in the epiphyte tree cover survey as part of the Macaulay Honors College Bioblitz found that, on average, bark with lichens at Freshkills had 27% cover of epiphytes (though many trees had no epiphytes and were not included in the study). Most of this cover was from foliose lichens (83%), some was from mosses (11%), and a small proportion was from crustose lichens (5.5%). No fruticose lichens were located. The abundance of corticolous lichens was similar in the North Woods and Riparian Area, with 34.9% and 39.5% average foliose cover, and 2.2% and 2.7% average crustose cover, respectively. The lowest abundance of all lichens was found on the Main Mound with 0.2% average foliose cover and 0.05% average crustose cover.

DISCUSSION

The discovery of 17 species at Freshkills Park was very surprising given the young age of the park (<20 years old) since lichens are often slow to colonize an area (Lie et al. 2009), and its situation over a large landfill in a densely urbanized landscape, an area with very poor air quality. Most thalli of the species we observed were quite small and infrequent, and we suspect that some species on rocks were brought in

Species of Freshkills Park	Halsey 1823	Woods 1914	Brodo 1968; 2014	Delendick 1994	Stalter 2004
<i>Amandinea milliaria</i>	-	-	+	-	-
<i>Amandinea polyspora</i>	-	-	+	-	-
<i>Anisomeridium</i> sp.	-	-	-	-	-
<i>Caloplaca feracissima</i>	-	-	+	+	-
<i>Caloplaca subsoluta</i>	-	-	-	-	-
<i>Candelaria concolor</i>	+	+	+	+	-
<i>Flavoparmelia caperata</i>	+	+	+	-	-
<i>Lecanora dispersa</i>	-	-	+	-	-
<i>Lecanora strobilina</i>	-	-	+	-	-
<i>Leiomonis erratica</i>	-	-	+	-	-
<i>Phaeocalicium polyporaeum</i>	-	-	+	-	-
<i>Phaeophyscia adiastrata</i>	-	-	-	-	-
<i>Phaeophyscia pusilloides</i>	-	-	+	-	-
<i>Phaeophyscia rubropulchra</i>	-	-	+	-	-
<i>Physcia millegrana</i>	-	-	+	+	-
<i>Physciella cloantha</i>	-	-	-	-	-
<i>Pyrrhospora varians</i>	-	-	+	-	-
<i>Verrucaria</i> cf. <i>elaeina</i>	-	-	-	-	-

Table 1. List of species collected at Freshkills Park and comparison to previous floras in parts, or all, of the New York City Metropolitan Area (+ indicates presence in a list, - indicates absence from a list, names in bold-face type are new records for NYC).

with filling material (e.g., *Lecanora dispersa*). However, the corticolous species most likely dispersed to the study area from surrounding areas because the park is primarily maintained as a grassland and most trees have established naturally. This suggests that there are populations of all reported corticolous species occurring elsewhere within dispersal distance. Many of the collections for this flora were made from fallen trees and rotting logs, highlighting the importance of these substrates as habitat, which has been shown previously in many settings (Bunnell et al. 2008, Hauck et al. 2012).

The difference among species lists for lichens in the New York City metropolitan region is quite striking (Table 1). Unsurprisingly, historical lists (e.g., Halsey 1823, Woods 1914) reported many fruticose species, species associated with cyanobacteria, and other groups of lichens that are now quite rare throughout the region; none of these were not found at Freshkills Park. Additionally, the lichen flora of Long Island is much richer than the flora reported here, likely due to the much larger land area along with presence of older natural habitats (Brodo 1968, Harris 1987, Harris et al. 1987). Surprisingly, we found a number of species that have not been reported from the greater New York metropolitan area, suggesting that the heterogeneous, urbanized areas in and around New York City could host correspondingly distinct lichen floras. A thorough search of the region would likely uncover a surprisingly rich and distinctive lichen flora for such a densely populated and urbanized area, especially when special attention is paid to the crustose species, which represented 65% of the diversity at Freshkills Park. The surveys by the Macaulay Honors College students found that only 5.5% of the total epiphyte cover consisted of crustose lichens; the highest cover group, foliose lichens, consisted mainly of the very abundant *Physcia millegrana*.

Many of the species found at Freshkills are already described as city (or pollution) tolerant in other contexts. Nimis and Martellos (2008), in their ITALIC Information System on Italian Lichens database categorized several of the species we found as rather to highly tolerant of eutrophication in Italy, including

Candelaria concolor, *Lecanora dispersa*, and *Physciella chloantha*. Nimis and Martellos also included several species of *Caloplaca* and *Verrucaria* in the eutrophication-tolerant group, although not the species that we found at Freshkills. In surveys after landfill enlargement in central Italy, Paoli et al. (2012), found several of the Freshkills lichens in their study: *Candelaria concolor*, *Lecanora strobilina*, and *Physciella chloantha*. One of the lichens we found on rock, *Leimonis erratica*, was also one of the most abundant lichens on the mountainsides of Palmerton, Pennsylvania, near the former location of a zinc smelter (Howe & Lendemer 2010). *Candelaria concolor*, *Phaeophyscia rubropulchra*, *Phaeophyscia pusilloides*, *Physcia millegrana*, and *Physciella cloantha* are listed by Will-Wolf et al. (2015) as lichens of the northeastern United States that are tolerant to acidic air pollution.

Flavoparmelia caperata presents an interesting case of a lichen that may be tolerant of some, but not all urban conditions. It was the most common lichen near in the landfill studied by Paoli et al (2015), and though present in those marginal habitats near the landfill, it did not thrive there, as measured by indicators of photosynthetic activity and secondary compound production. Additionally, Brodo (1961) found that *F. caperata* was relatively pollution intolerant, as transplants of the species died within four months of establishment in Brooklyn. Will-Wolf (2015) also ranked *F. caperata* as a relatively intolerant species, and it is rarely found in Philadelphia (Howe, unpublished data).

Some of the species we found are not frequently reported from cities; these include *Amandinea milliaria*, *Anisomeridium* sp., *Phaeocalicium polyporaeum*, *Phaeophyscia adiastrum*, *Pyrrhospora varians*, and *Verrucaria elaeina*. The first four of these are crustose species that are easily overlooked and may actually be more widespread in cities. The discovery of a *Phaeocalicium* species, which grows as stubble on a polypore fungus, might not be considered surprising because the host organism, *Trichaptum biforme* (Fr.) Ryvarden is widespread in North America (Hutchinson, 1987), and this species has previously been reported from urban parks (McMullin et al. 2014). *Phaeophyscia adiastrum* is common in the northeastern United States (Hinds & Hinds 2007), but has not been reported in the other earlier studies of the New York Region because most studies were conducted previous to 1977, when the species was described (Esslinger 1977). The absence of some commonly reported urban lichens is also notable. *Parmelia sulcata* (L.) Ach. has been reported from many urban settings (reviewed by Conti & Cecchetti 2001), and it, along with *Hypogymnia physodes* (L.) Nyl., demonstrate high tolerance for atmospheric SO₂ (Prescott et al. 2015). The lichens listed by Will-Wolf et al. (2015) as tolerant of air pollution included *P. sulcata* along with several other lichens we did not find, including *Physconia leucoleptes* (Tuck.) Essl., *Xanthomendoza fallax* Sørensen et al., and *Flavopunctelia flaventior* (Stirt.) Hale.

Our work provides baseline data for the lichen diversity at Freshkills Park, and is the first we know of specifically devoted to reporting on lichens at a decommissioned landfill. It is also the first to document the lichen flora specifically of Staten Island. At the time of the survey only a portion of the park was open, as much of it is still transitioning from being a landfill. Once the entire park is complete, a thorough search of all four mounds would certainly be warranted. Many of the specimens from this study were from *Prunus* and *Robinia* trees, but as tree diversity increases in the future, the corresponding epiphytic diversity will likely also increase. Repeated visits to the park in the coming decades will likely yield interesting results because more trees are being planted at the park as part of the Million Trees NYC program (Zalensky et al. 2014). As those trees mature, they will provide substrates for a wider variety of lichens (Lie et al. 2009), especially as the woody vegetation expands over the capped mounds, perhaps through bird dispersal (Robinson & Handel 1993). The tidal marsh will likely also prove to be valuable lichen habitat, as lichen species richness increases with more air moisture (Coffey & Fahrig 2012). As large and small-scale environmental change continues in densely urbanized landscapes across eastern North America, tracking the associated lichen flora will provide important insights into how lichens are both negatively and positively impacted by anthropogenic change.

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APPENDIX – ANNOTATED CHECKLIST OF FRESHKILLS LICHENS

The checklist presented below is arranged alphabetically by genus and species. Voucher specimens deposited at NY are cited for each species, and for each voucher specimen the locality data are provided. Many of the most common species are illustrated in two plates following the checklist. The four sites visited for the survey are indicated in the list using abbreviated codes as follows:

NM – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, north end of North mound, 0.68 km E of intersection of Pearl Harbor Memorial Expressway and Victory Blvd.

PL – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, north end of North Mound in forest behind Schmul Playground, 98 Pearson St., Staten Island.

SE – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, southeast end of North mound, 1.56 km SE of intersection of Pearl Harbor Memorial Expressway and Victory Blvd.; Freshkills Park, southeast end of North Mound, north of bridge, on west side of river, along trail at base of mound.

Amandinea milliaria (Tuck.) P.F. May & Sheard

Specimens examined – **NM**, on *Acer*, 26.x.2015, J.L. Allen 4480 (NY), on *Robinia pseudoacacia*, J.L. Allen 4482 (NY).

- Amandinea polyspora* (Willey) E. Lay & P.F. May
Specimens examined – **NM**, on *Prunus serotina*, J.L. Allen 4486 (NY); **PL**, on *Prunus*, N.M. Howe 378 (NY), N.M. Howe 382 (NY), N.M. Howe 436 (NY).
- Anisomeridium* sp.
Specimen examined – **PL**, on rock, N.M. Howe 376 (NY).
 NOTE. – Specimen too poorly developed to identify to species.
- Caloplaca feracissima* H. Magn.
Specimen examined – **NM**, on rock, J.L. Allen 4414 (NY).
- Caloplaca subsoluta* (Nyl.) Zahlbr.
Specimen examined – **NM**, on rock, J.L. Allen 4413 (NY).
- Candelaria concolor* (Dicks.) Arnold
Specimen examined – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4411 (NY).
- Flavoparmelia caperata* (L.) Hale
Specimen examined – **NM**, on *Prunus serotina*, J.L. Allen 4484 (NY).
- Lecanora dispersa* (Pers.) Sommerf.
Specimen examined – **NM**, on rock, J.L. Allen 4415 (NY).
- Lecanora strobilina* Ach.
Specimens examined – **SE** on *Prunus*, J.L. Allen 4491 (NY); **PL**, on *Prunus*, N.M. Howe 377 (NY), N.M. Howe 381 (NY), N.M. Howe 437 (NY).
- Leiomonis erratica* (Körb.) R.C. Harris & Lendemer
Specimens examined – **SE**, on rock fill, J.L. Allen 4416 (NY), N.M. Howe 383 (NY), N.M. Howe 384 (NY).
- Phaeocalicium polyporaeum* (Nyl.) Tibell
Specimens examined – **NM**, on *Trichaptum biforme*, J.L. Allen 4485 (NY); **PL**, on *Trichaptum biforme*, N.L. Howe 380 (NY).
- Phaeophyscia adiastrum* (Essl.) Essl.
Specimen examined – **SE**, on fallen branch, J.L. Allen 4490 (NY).
- Phaeophyscia pusilloides* (Zahlbr.) Essl.
Specimen examined – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4412 (NY).
- Phaeophyscia rubropulchra* (Degel.) Moberg
Specimens examined – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4409 (NY); **PL**, on *Prunus*, N.M. Howe 437 (NY).
- Physcia millegrana* Degel.
Specimens examined – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4410 (NY); **SE**, on *Pinus*, J.L. Allen 4489 (NY), N.M. Howe 438 (NY).
- Physciella chloantha* (Ach.) Essl.
Specimen examined – **SE**, on *Robinia pseudoacacia*, J.L. Allen 4488 (NY).
- Pyrrhospora varians* (Ach.) R.C. Harris
Specimens examined – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4483 (NY); **PL**, on *Prunus*, N.M. Howe 379 (NY).
- Verrucaria* cf. *elaeina* Borrer
Specimen examined – **NM**, on brick, J.L. Allen 4481 (NY).
 NOTE. – This specimen was identified by R.C. Harris and though this specimen is most similar to *V. elaeina* it doesn't exactly fit the current circumscription of this species (Orange 2000). However, there is no described species to which it seems to be more similar.

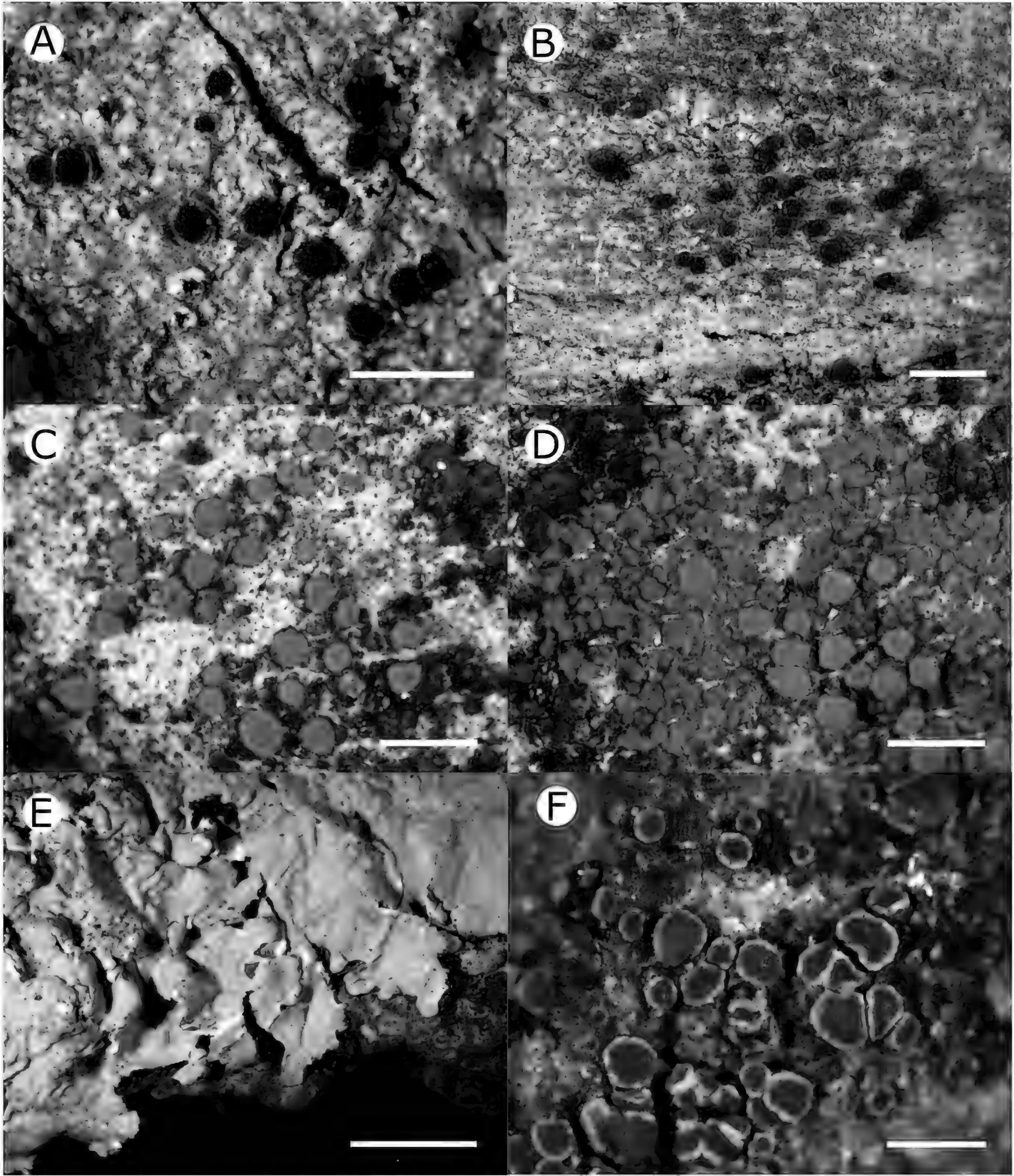


Figure 2. Selected lichens of Freshkills Park, (scale = 1mm unless otherwise noted). A. *Amandinea milliaria* (Allen 4482, NY). B. *Amandinea polyspora* (Allen 4486, NY). C. *Caloplaca feracissima* (Allen 4413, NY). D. *Caloplaca subsoluta* (Allen 4414, NY). E. *Flavoparmelia caperata* (Allen 4484, NY) (scale = 5mm). F. *Lecanora dispersa* (Allen 4415, NY).

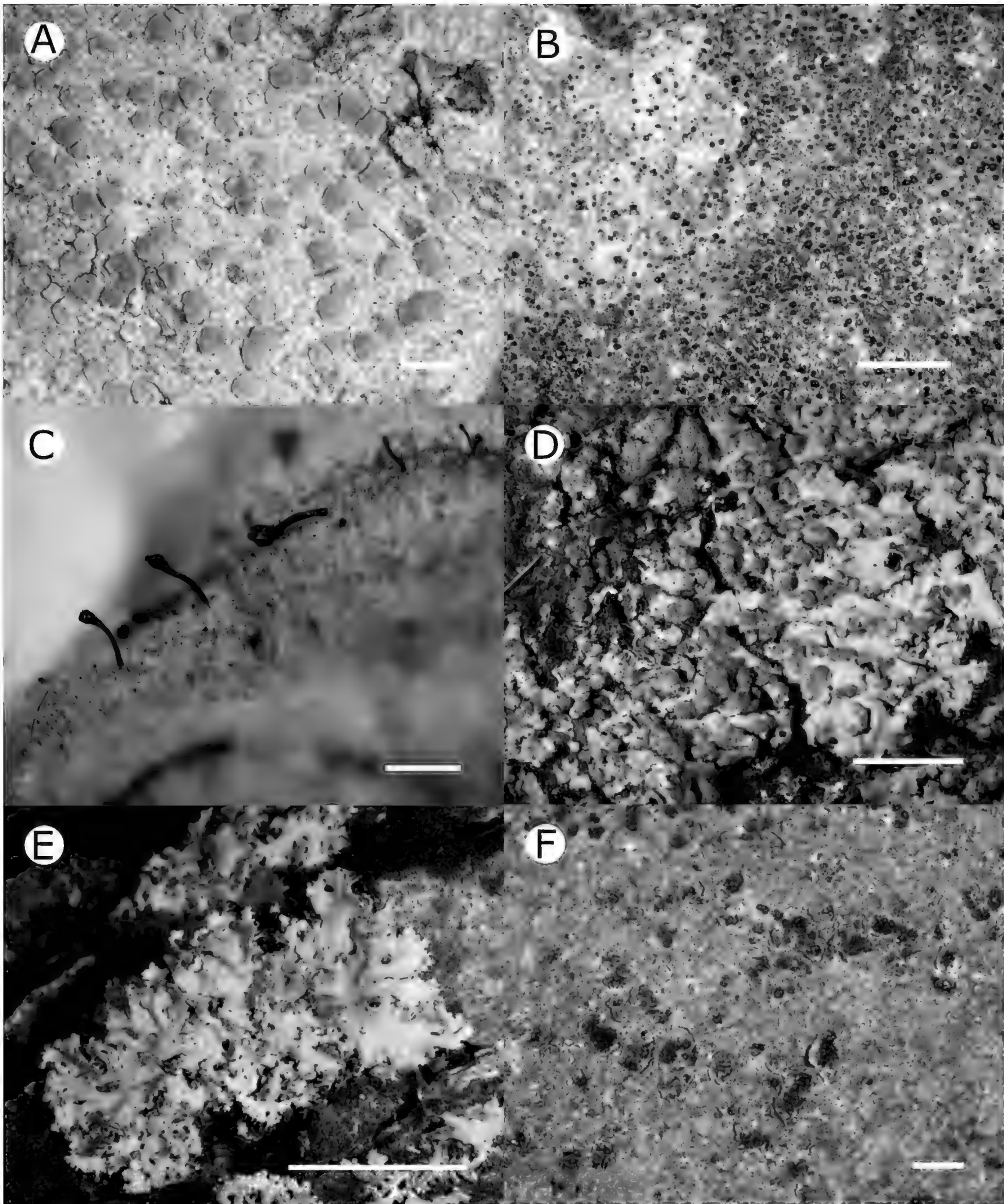


Figure 3. Selected lichens of Freshkills Park, (scale = 1mm unless otherwise noted). A. *Lecanora strobilina* (Allen 4491, NY). B. *Leimonis erratica*, (Allen 4416, NY) (scale = 5mm). C. *Phaeocalicium polyporaeum* (Allen 4490, NY). D. *Phaeophyscia adiastrata* (Allen 4490, NY) (scale = 5mm). E. *Physcia millegrana* (Allen 4489, NY) (scale = 5mm). F. *Verrucaria* cf. *elaeina* (Allen 4481, NY).

The Calicioids of Newfoundland, Canada

RICHARD TROY MCMULLIN¹ AND ANDRÉ ARSENAULT²

ABSTRACT. – Eight mature forests throughout the Island of Newfoundland in Canada were surveyed for lichenized and non-lichenized calicioid fungi. Thirty-two species were discovered, which increases the number of calicioids known from the island to 34. Twenty-two species are reported for the first time in the province of Newfoundland and Labrador: *Calicium glaucellum*, *C. lenticulare*, *Chaenotheca balsamconensis*, *C. chrysocephala*, *C. gracilentia*, *C. gracillima*, *C. laevigata*, *C. trichialis*, *C. xyloxena*, *Chaenothecopsis consociata*, *C. debilis*, *C. marcineae*, *C. nana*, *C. pusiola*, *C. savonica*, *C. viridireagens*, *Microcalicium conversum*, *M. disseminatum*, *Phaeocalicium compressulum*, *P. matthewsianum*, *Stenocybe flexuosa*, and *S. pullatula*. Additional calicioid species are expected to occur in Newfoundland as many ecoregions and habitats remain unexplored for these taxa.

KEYWORDS. – Caliciales, Coniocybaceae, Microcaliciaceae, Mycocaliciaceae Physciaceae, Atlantic Canada.

INTRODUCTION

Calicioids are lichenized and nonlichenized fungi that have a mazaedium (Tibell 1996, 1999). Most calicioids are crustose in growth form and produce small pin-like fruiting bodies that are <2 mm tall (these reproductive structures have led them to be known vernacularly as stubble lichens). A considerably smaller number of species are fruticose in growth form (Selva 2013, Tibell 1999). For example, in the Acadian Forest of eastern North America only two calicioids are fruticose, *Sphaerophorus fragilis* (L.) Pers. and *S. globosus* (Huds.) Vain. (Selva 2014). The crustose calicioids are easily overlooked because they are inconspicuous and many species colonize substrates and microhabitats that are often not inhabited by other lichen species. Consequently, these habitats are often not examined by lichenologists (Selva 2013). Calicioids may also be overlooked because many species only tend to occur in old-growth forests with a high diversity of microhabitats (Tibell 1992, Selva 2003, McMullin et al. 2008, Lõhmus & Lõhmus 2011), which are ecosystems that are increasingly uncommon in areas of the world (Rudela et al. 2005, Henry & Quinby 2010, McMullin et al. 2008).

In Newfoundland, Canada, the lichen biota has been well studied compared to other parts of Canada, e.g., Eckfeldt (1895), Arnold (1899), Macoun (1902), Ahti (1983), Thomson (1984, 1997), Yetman (1999), Deduke & Piercey-Normore (2013), Piercey-Normore (2013), Deduke et al. (2014), McCarthy et al. (2015). There appears to be a knowledge gap, however, for the calicioids in this region. Prior to our study, twelve calicioid species were known from Newfoundland, which is conspicuously fewer than the 89 species known from the Acadian Forest (Selva 2014) and the 40 species known from the nearby Parc national de la Gaspésie in eastern Québec (McMullin unpublished data). The aim of our study was to better understand the calicioid biota in Newfoundland by surveying mature and old-growth forests throughout the region.

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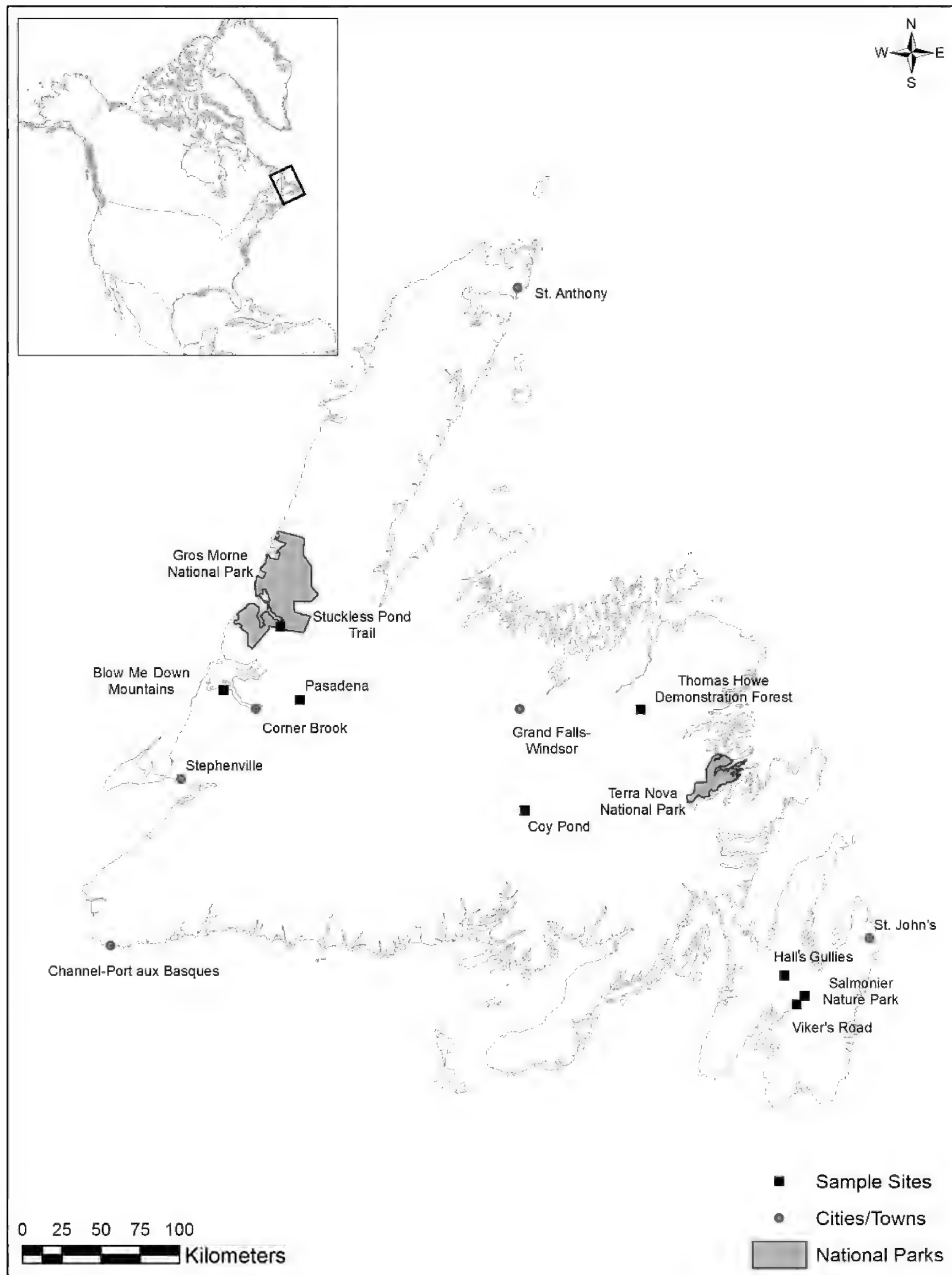


Figure 1. Location of the eight study sites surveyed throughout Newfoundland.

The vegetation of the Island of Newfoundland (106,000 km²) is a unique type of boreal ecosystem shaped by highly variable geology and climate (Damman 1965). Forests dominated by conifers represent about 56% of the vegetation and are naturally fragmented by heathlands (19%), peatlands (14%), and water (10%) (Meades 2008). *Abies balsamea* (balsam fir), and *Picea mariana* (black spruce) dominate the majority of the forested landscapes and often occur in mixtures with other species of coniferous and deciduous trees. The island has nine ecoregions, which represent the dominant biogeoclimatic features (Damman 1983). In this study, we sampled in four ecoregions (Fig.1) including: the Avalon Forest ecoregion located in the middle of the Avalon Peninsula (Hall's Gullies, Salmonier Nature Park, Viker's Road), the Central Newfoundland Forest ecoregion (Thomas Howe Demonstration Forest), Maritime Barrens ecoregion (Coy Pond), and the Western Newfoundland Forest ecoregion (Pasadena watershed, Stuckless Pond Trail, and Blow Me Down Mountains). The Central Newfoundland Forest and Maritime Barrens ecoregions have the most continental climate while the other two ecoregions have strong oceanic influences (Damman 1983). The dominant forest disturbances are defoliating insect outbreaks (e.g., eastern spruce budworm and hemlock looper), which regularly produce deadwood habitat (Arsenault et al. submitted). Fire has played a role in shaping some of the forests especially in the Central Newfoundland Forest and Maritime Barrens ecoregions, but it is considered much less frequent than in boreal forests on the mainland (Berry et al. 2015).

MATERIALS AND METHODS

Field Sampling

We examined eight mature and old-growth forests, with some younger and disturbed patches, throughout the Island of Newfoundland between October 5 and November 4, 2015. Our site surveys followed the Floristic Habitat Sampling method described by Newmaster et al. (2005). Those authors showed that sampling throughout a study site is more effective for capturing cryptogam diversity than the use of smaller representative plots. Selva (1999, 2003) referred to this method as an 'intelligent meander' as it allowed more time to be spent in microhabitats that are likely to be colonized by calicioids than those that are not.

Identification

We examined external morphology using a Leica S8AP0 stereo microscope. Using a Leica DME compound microscope, we studied internal morphology and chemical reactions with 50% nitric acid, 10% and 20% potassium hydroxide, and Lugol's iodine following Brodo et al. (2001). Specimens were deposited in the Canadian Museum of Nature (CANL) in Gatineau, Québec and at the Canadian Forest Service Herbarium (CDFN) in Corner Brook, Newfoundland and Labrador.

RESULTS

We discovered 32 species in nine genera throughout the eight forests we sampled. Sixteen (16) species were lichenized (the calicioid lichens) and 16 were not (the calicioid fungi). Based on an up-to-date but heretofore unpublished lichen checklist for Newfoundland and Labrador (John McCarthy, Stephen Clayden, and Teuvo Ahti, unpublished data) and a literature review (citations for species previously reported from Newfoundland are listed in the annotated list below) twenty-two species are reported here for the first time from the Province of Newfoundland and Labrador: *Calicium glaucellum* (Fig. 2a), *C. lenticulare* (Fig. 2b), *Chaenotheca balsamconensis*, *C. chrysocephala*, *C. gracilentia* (Fig. 2d), *C. gracillima*, *C. laevigata*, *C. trichialis*, *C. xyloxena*, *Chaenothecopsis consociata*, *C. debilis*, *C. marcineae*, *C. nana*, *C. pusiola*, *C. savonica*, *C. viridireagens*, *Microcalicium conversum*, *M. disseminatum*, *Phaeocalicium compressulum*, *P. matthewsianum*, *Stenocybe flexuosa*, and *S. pullatula*. The sites with the greatest number of calicioid species were Hall's Gullies (18 species), Stuckless Pond Trail in Gros Morne National Park (11 species), and the Pasadena watershed (11 species). An annotated checklist of the calicioids of Newfoundland is presented below. We also provide a key to the species to facilitate further study of these organisms in the region.

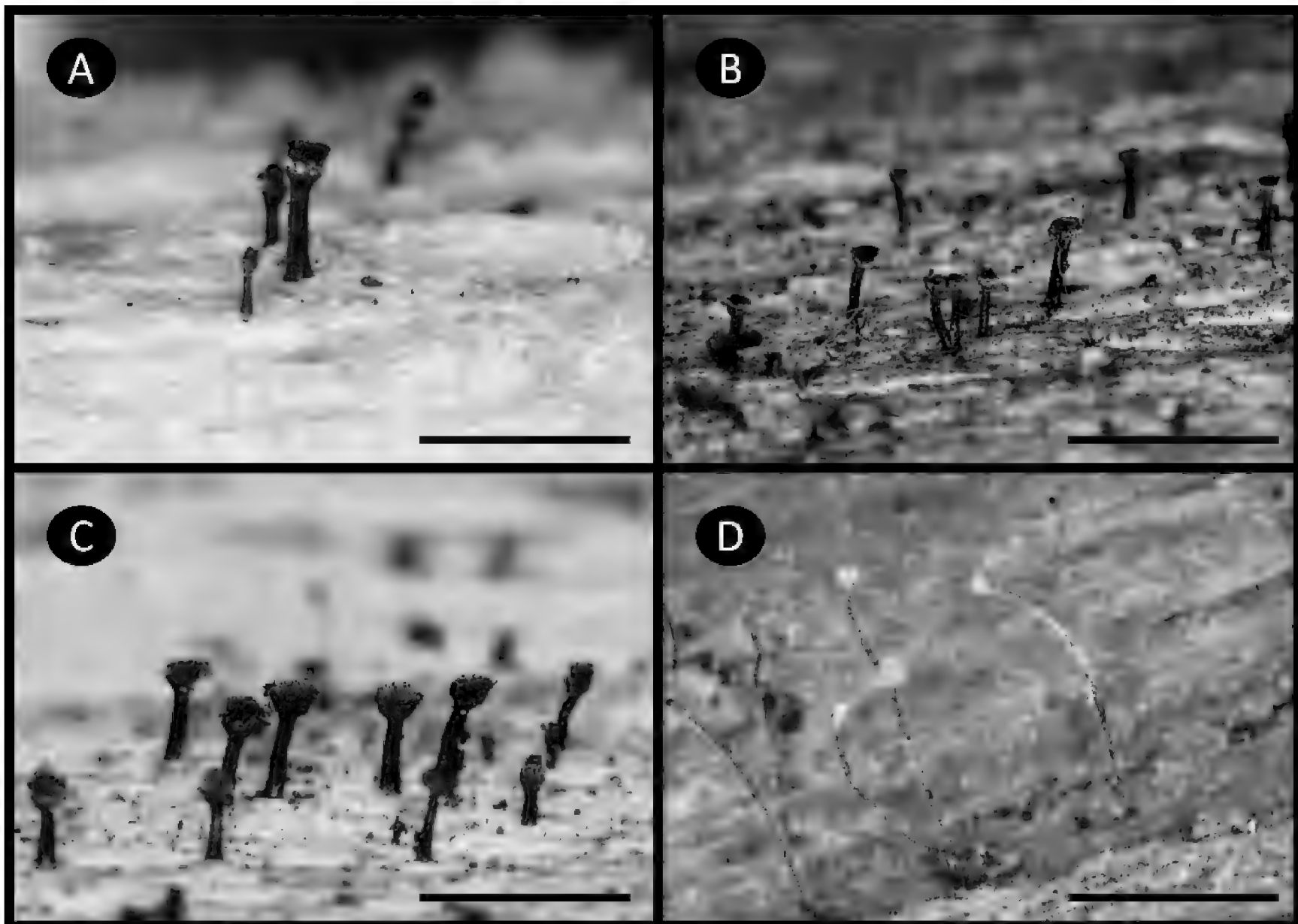


Figure 2. Selected lichenized calicioids collected in Newfoundland. A, *Calicium glaucellum* from Gros Morne National Park (McMullin 16599, CANL). B, *Calicium lenticulare* from Hall's Gullies (McMullin 16653, CANL). C, *Calicium abietinum* from Salmonier Nature Park (McMullin 16100, CANL). D, *Chaenotheca gracilentia* from the Pasadena watershed (McMullin 16633, CANL). Scales = 2.5 mm in D, 1.6 mm in B, 1.0 mm in C, and 0.9 mm in A.

ANNOTATED LIST OF SPECIES

The following list is arranged alphabetically by genus and species. New records for Newfoundland and Labrador are preceded by an asterisk (*). Nonlichenized species are preceded by a dagger (†). Nomenclature follows Esslinger (2015). Authorities follow Brummitt and Powell (1992). Newfoundland and Labrador census divisions follow McManus et al. (1991).

Calicium abietinum Pers.

FIGURE 2C.

NOTE. – Previously reported in Newfoundland by Thomson (1997).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin* 16291, 16296, 16297, 16300, 16304, 16306, 16315, 16317, 16591 (all CDFN, [collected by A. Arsenault]); Avalon Peninsula, E of Salmonier River, forests off Viker's Rd., 25.x.2015, lignicolous on a snag, *R.T. McMullin* 16898 (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 14.x.2015, lignicolous on a snag, *R.T. McMullin* 16100 (CANL). DIVISION 5: Corner Brook region, Blow Me Down Mountains, Nature Trail, ~100 m S of Main Rd., 03.xi.2015, lignicolous on a snag, *R.T. McMullin* 16917 (CANL); Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin* 16598 (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *McMullin* 16937, 16938, 16939 (all CDFN [collected by A. Arsenault]); Gander, Thomas Howe Demonstration Forest, 30.x.2015, lignicolous on a snag, *R.T. McMullin* 16618 (CANL).

**Calicium glaucellum* Ach.

FIGURE 2A.

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16599* (CANL).

**Calicium lenticulare* Ach.

FIGURE 2B.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16303, 16312, 16316, 16932, 16933* (all CDFN [collected by A. Arsenault]); 28.x.2015, *R.T. McMullin 16653, 16669* (both CANL); Avalon Peninsula, Salmonier Nature Park, along boardwalk near the great-horned owl enclosure, 10.x.2015, lignicolous on a snag, *R.T. McMullin 16021* (CANL); Salmonier Nature Park, along path to Butler's Pool, 19.x.2015, lignicolous on a snag, *R.T. McMullin 16084* (CANL).

Calicium salicinum Pers.

NOTE. – Previously reported from Newfoundland by Macoun (1902).

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16776* (CANL).

Calicium trabinellum (Ach.) Ach.

NOTE. – Previously reported from Newfoundland by Macoun (1902) and Thomson (1997).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16314* (CDFN [collected by A. Arsenault]). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16597* (CANL); Corner Brook region, Blow Me Down Mountains, Nature Trail, ~100 m S of Main Rd., 03.xi.2015, lignicolous (snag), *R.T. McMullin 16913* (CANL).

**Chaenotheca balsamconensis* J.L. Allen & McMullin

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Salmonier Nature Park, along boardwalk near the woodland caribou enclosure, 10.x.2015, fungicolous on *Trichaptum abietinum*, *R.T. McMullin 16030* (CANL); Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Road, 29.x.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16823* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16612* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16943* (CDFN [collected by A. Arsenault]).

Chaenotheca brunneola (Ach.) Müll. Arg.

NOTE. – Previously reported from Newfoundland by Deduke et al. (2014).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16277, 16281, 16282, 16283, 16284, 16285, 16286, 16287, 16289, 16290, 16590, 16934* (all CDFN [collected by A. Arsenault]); 28.x.2015, *R.T. McMullin 16667* (CANL), 29.x.2015, *R.T. McMullin 16825* (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 14.x.2015, lignicolous on a snag, *R.T. McMullin 16076* (CANL). DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16637* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *R.T. McMullin 16940, 16941, 16942* (all CDFN [collected by A. Arsenault]).

**Chaenotheca chrysocephala* (Ach.) Th. Fr.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, E of Salmonier River, forests off Viker's Rd., 25.x.2015, lignicolous on a snag, *R.T. McMullin 16897* (CANL); Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous on an *Abies balsamea* snag, *R.T. McMullin 16930* (CANL [collected by A. Arsenault]).



Figure 3. Habitat and niche of *Chaenotheca furfuracea* (inset), which grows on the soil and rootlets of upturned trees (photo from Blow Me Down Trails; *Arsenault 417*, CDFN). Scale = 2.2 mm.

Chaenotheca furfuracea (L.) Tibell

FIGURE 3.

NOTE. – Previously reported from Newfoundland by Macoun (1902) and Thomson (1997) as *Coniocybe furfuracea* (L.) Pers.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Corner Brook region, Blow Me Down Trails, x.2014, on the soil and rootlets of an upturned tree, *A. Arsenault 417* (CDFN); Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag in humid conditions, *R.T. McMullin 16638* (CANL).

**Chaenotheca gracilenta* (Ach.) Mattson & Middelb.

FIGURE 2D.

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous in a cavernous hollow of a live *Betula alleghaniensis*, *R.T. McMullin 16633* (CANL).

**Chaenotheca gracillima* (Vain.) Tibell

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 28.x.2015, lignicolous, *R.T. McMullin 16670* (CANL), 29.x.2015, lignicolous on a snag, *R.T. McMullin 16765* (CANL).

**Chaenotheca laevigata* Nád. v.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16826* (CANL). DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous, *R.T. McMullin 16639* (CANL).

**Chaenotheca trichialis* (Ach.) Th. Fr.

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16766* (CANL).

**Chaenotheca xyloxena* Nádv.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on *Betula alleghaniensis*, *R.T. McMullin 16632* (CANL), lignicolous on a snag, *R.T. McMullin 16867* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *McMullin 16945* (CDFN [collected by A. Arsenault]).

*†*Chaenothecopsis consociata* (Nádv.) A.F.W. Schmidt

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lichenicolous on *Chaenotheca chrysocephala*, *R.T. McMullin 16929* (CANL [collected by A. Arsenault]).

*†*Chaenothecopsis debilis* (Turner & Borrer ex Sm.) Tibell

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16606* (CANL).

*†*Chaenothecopsis marcineae* Selva

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, resinicolous on *Picea mariana*, *R.T. McMullin 16593* (CANL).

*†*Chaenothecopsis nana* Tibell

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena, public forests on the E edge of the town, 02.xi.2015, corticolous in a hollow of a live *Betula alleghaniensis* trunk, *R.T. McMullin 16625* (CANL).

*†*Chaenothecopsis pusiola* (Ach.) Vain.

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 28.x.2015, lignicolous, *McMullin 16646, 16671* (both CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16596* (CANL).

*†*Chaenothecopsis savonica* (Räsänen) Tibell

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16707* (CANL).

*†*Chaenothecopsis viridireagens* (Nádv.) A.F.W. Schmidt

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16301* (CANL [collected by A. Arsenault]).

*†*Microcalicium conversum* Tibell

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on *Picea mariana*, *R.T. McMullin 16595* (CANL).

*†*Microcalicium disseminatum* (Ach.) Vain.

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16640* (CANL).

†*Mycocalicium subtile* (Pers.) Szatala

NOTE. – Previously reported either from Newfoundland or Labrador by Eckfeldt (1895) as *Calicium subtile* Fr. and from Newfoundland by Thomson (1997).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16278, 16279, 16288, 16294, 16295, 16299, 16308, 16309, 16311, 16935, 16936* (all CDFN [collected by A. Arsenault]),

28.x.2015, *R.T. McMullin 16645, 16647, 16668* (all CANL), 29.x.2015, lignicolous on a snag, *R.T. McMullin 16710* (CANL); Avalon Peninsula, Salmonier Nature Park, between Murphy's Falls and the Three Rivers, 19.x.2015, lignicolous on a snag, *R.T. McMullin 16083* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16594* (CANL). Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16635* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *R.T. McMullin 16946* (CDFN [collected by A. Arsenault]).

*†*Phaeocalicium compressulum* (Nyl. ex Szatala) A.F.W. Schmidt

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, corticolous on *Alnus viridis* ssp. *crispa*, *R.T. McMullin 16761* (CANL); Avalon Peninsula, Salmonier Nature Park, along the trail between the visitor centre and the administration building, 10.x.2015, corticolous on *A. viridis* ssp. *crispa*, *R.T. McMullin 16039* (CANL).

*†*Phaeocalicium matthewsianum* Selva & Tibell

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, corticolous on *Betula alleghaniensis*, *R.T. McMullin 16734* (CANL); Avalon Peninsula, Salmonier Nature Park, along the trail between the visitor centre and the administration building, 10.x.2015, corticolous on *B. alleghaniensis*, *R.T. McMullin 16040* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on a *Betula* sp., *R.T. McMullin 16601* (CANL). DIVISION 6: Gander, Thomas Howe Demonstration Forest, 30.x.2015, corticolous on a *Betula* sp., *R.T. McMullin 16622* (CANL).

Sphaerophorus fragilis (L.) Pers.

NOTE. – Previously reported from either Newfoundland and Labrador by Eckfeldt (1895) and from Newfoundland by Ahti (1983) and McCarthy et al. (2015).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 11.x.2015, saxicolous, *R.T. McMullin 16062* (CANL); Avalon Peninsula, Salmonier Nature Park, E edge of the park, near MacKay's Lookout, 20.x.2015, saxicolous, *R.T. McMullin 16114, 16182* (both CANL).

Sphaerophorus globosus (Huds.) Vain.

NOTE. – Previously reported from either Newfoundland or Labrador by Eckfeldt (1895) as *Sphaerophorus coralloides* Pers. and from Newfoundland by Ahti (1983) and McCarthy et al. (2015).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, *R.T. McMullin 16338, 16349, 16396, 16405, 16414, 16446, 16484, 16489, 16510, 16517, 16551, 16567, 16575* (all CDFN; collected by A. Arsenault), 29.x.2015, corticolous on *Betula alleghaniensis* and *Picea mariana*, *R.T. McMullin 16714* (CANL), *R.T. McMullin 16769* (CANL), 28.x.2015, corticolous on *Abies balsamea*, *R.T. McMullin 16786* (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 19.x.2015, corticolous on *Betula alleghaniensis*, *R.T. McMullin 16212* (CANL); Salmonier Nature Park, along boardwalk near the great-horned owl enclosure, 10.x.2015, corticolous on *Picea mariana*, *R.T. McMullin 16015* (CANL).

†*Sphinctrina turbinata* (Pers. : Fr.) De Not.

NOTE. – Previously reported from either Newfoundland or Labrador by Eckfeldt (1895) as *Calicium turbinatum* Pers. and from Newfoundland by Deduke et al. (2014).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lichenicolous on *Pertusaria* sp. on a *Betula alleghaniensis* snag, *R.T. McMullin 16756* (CANL); Avalon Peninsula, East of Salmonier River, forests off Viker's Rd., 25.x.2015, lichenicolous on *Pertusaria* sp. on *Betula alleghaniensis*, *R.T. McMullin 16864* (CANL).

*†*Stenocybe flexuosa* Selva & Tibell

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, corticolous on a *Picea* sp., *R.T. McMullin 16636* (CANL).

†*Stenocybe major* Nyl. ex Körb.

NOTE. – Previously reported from Newfoundland by Yetman (1999).

Specimens examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on *Abies balsamea*, R.T. McMullin 16600, 16609, 16611 (all CANL); Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, corticolous on *Abies balsamea*, R.T. McMullin 16644 (CANL).

*†*Stenocybe pullatula* (Ach.) Stein

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 6: Gander, Thomas Howe Demonstration Forest, 30.x.2015, corticolous on *Alnus incana* ssp. *rugosa*, R.T. McMullin 16623 (CANL).

KEY TO THE CALICIOIDS OF NEWFOUNDLAND AND LABRADOR

This key requires the determination of three algal genera: *Dictyochloropsis* (cells globose to subglobose, <20 µm in diameter), *Stichococcus* (cells cylindrical to ellipsoidal, <8(–12) µm long), and trebouxoid (cells globose to subglobose, <14 µm in diameter).

- 1a. Thallus fruticose 2
 - 2a. All branches with a somewhat consistent diameter; medulla IKI-; on soil and rock *Sphaerophorus fragilis*
 - 2b. Main branches with a larger diameter than the side branches; medulla IKI+ blue; on rock, soil, and trees *Sphaerophorus globosus*
- 1b. Thallus crustose 3
 - 3a. Ascospores 1-celled 4
 - 4a. Mazaedia pale-brown, grey-brown, or brown; ascospores globose to ellipsoidal; photobiont present (lichenized), either *Dictyochloropsis*, *Stichococcus*, or trebouxoid 5 (*Chaenotheca*)
 - 5a. Apothecia (stalks and capitula) with yellow pruina 6
 - 6a. Photobiont *Stichococcus*; thallus granular, yellow-green; apothecia usually fully covered by yellow pruina, pruina occasionally absent at the base; capitulum globose; excipula poorly developed; in moist and shaded habitats, frequently on the soil and rootlets of upturned trees *Chaenotheca furfuracea* (Fig. 3)
 - 6b. Photobiont trebouxoid; thallus bright yellow to yellow-green or immersed; pruina usually only on the upper portions of the apothecia; capitula obovoid; excipula well developed; corticolous and lignicolous 7
 - 7a. Thallus bright yellow to green-yellow (vulpinic acid), granular to verrucose, continuous or scattered; corticolous and lignicolous *Chaenotheca chrysocephala*
 - 7b. Thallus immersed; usually lignicolous *Chaenotheca laevigata*
 - 5a. Apothecia epruinose or with brown, red-brown, grey-brown, or white pruina 8
 - 8a. Apothecia epruinose 9
 - 9a. On *Trichaptum abietinum*; thallus immersed, rarely granular; photobiont trebouxoid *Chaenotheca balsamconensis*
 - 9b. Corticolous or lignicolous; thallus immersed or granular; photobiont *Dictyochloropsis* or *Stichococcus* 10
 - 10a. Thallus usually immersed (on its typical substrate, lignum), occasionally granular and grey to green-grey (usually only when corticolous); photobiont *Dictyochloropsis* *Chaenotheca brunneola*
 - 10b. Thallus usually granular, grey to green-grey; photobiont *Stichococcus* *Chaenotheca trichialis*
 - 8b. Apothecia with brown, red-brown, grey-brown, or white pruina 11
 - 11a. Apothecia flexuous (<2.5 mm tall), with red-brown to brown pruina on the upper portions; capitula globose to subglobose; photobiont *Stichococcus*; corticolous and lignicolous in humid and shaded conditions *Chaenotheca gracillima*
 - 11b. Pruina white or grey-brown; apothecia flexuous or straight 12

- 12a.** Photobiont *Stichococcus*; apothecia flexuous, <3.5 mm tall, with grey to grey-brown pruina, particularly on the upper portions; capitula globose; excipula poorly-developed; mazaedia grey-brown; in shaded and humid conditions, usually in the hollows of old snags *Chaenotheca gracilentia* (Fig. 2D)
- 12b.** Photobiont *Stichococcus* or *Dictyochloropsis*; apothecia straight, <2 mm tall; excipula well developed; corticolous and lignicolous **13**
- 13a.** Photobiont *Dictyochloropsis*; apothecia lacking pruina, but they can appear pruinose because of pale hyphae on the low part of the capitula; thallus usually immersed (on its typical substrate, lignum), occasionally granular and grey to green-grey (usually only when corticolous) *Chaenotheca brunneola*
- 13b.** Photobiont *Stichococcus* **14**
- 14a.** Apothecia with faint white pruina on the upper portion, usually epruinose; thallus granular, grey to green-grey *Chaenotheca trichialis*
- 14b.** Apothecia with thick white pruina on the upper portion; thallus immersed *Chaenotheca xyloxena*
- 4b.** Mazaedia dark (blackish); photobiont absent (nonlichenized) **15**
- 15a.** Lichenicolous, on *Pertusaria* spp.; apothecia (stalks and capitulum) short (<0.3 mm tall); capitulum globose or subglobose *Sphinctrina turbinata*
- 15b.** Not on *Pertusaria* spp.; corticolous, lignicolous, or lichenicolous on *Chaenotheca* spp. **16**
- 16a.** Mature capitula flat (compressed), fan-shaped; apothecia <0.5 mm tall, KOH+ red enhanced in a wet mount; on *Alnus viridis* ssp. *crispa* *Phaeocalicium compressulum*
- 16b.** Mature capitula lenticular or globose; apothecia KOH-; on other substrates **17**
- 17a.** Mature asci <45 µm long, tips without a narrow channel (best seen in semi-mature asci at 1000x); apothecia <1 mm tall; ascospores brown, prolate-spheroidal (football-shaped), <8.5 µm long, surface smooth; usually lignicolous *Mycocalicium subtile*
- 17b.** Mature asci <55 µm long, tips with a narrow channel; apothecia <1.3 mm tall; ascospores brown to hyaline, ellipsoidal to prolate-spheroidal, <7 µm long, surface ornamented or smooth; corticolous, lignicolous, or lichenicolous on the thallus of *Chaenotheca* spp. **18**
- 18a.** Capitula lenticular; ascospores prolate-spheroidal, brown to dark brown, often irregularly-arranged in asci; surface ornamented (rough); apothecia <0.7 mm tall; usually corticolous *Chaenothecopsis nana*
- 18b.** Capitula globose; ascospores ellipsoidal, pale brown to hyaline, regularly-arranged in asci; surface smooth; apothecia <1.3 mm tall; lignicolous in Newfoundland, reported from bark, free living *Trentepohlia*, and the thalli of *Chaenotheca* spp. elsewhere *Chaenothecopsis savonica*
- 3b.** Mature ascospores ≥2-celled **19**
- 19a.** Mazaedia aeruginose (blue-green); apothecia sessile to subsessile; photobiont absent; on free living algae corticolous or lignicolous **20**
- 20a.** Excipula red-brown to brown; ascospores 2-celled *Microcalicium conversum*
- 20b.** Excipula aeruginose; ascospores often 3–4-celled *Microcalicium disseminatum*
- 19b.** Mazaedia blackish; apothecia sessile or stalked **21**
- 21a.** Thallus yellow; apothecia sessile; ascospores 2-celled, brown, ellipsoidal; photobiont trebouxoid; lignicolous *Cyphelium tigillare*
- 21b.** Thallus not yellow, indistinct or shades of green, grey, or white; apothecia stalked **22**
- 22a.** Mature ascospores ≥4-celled; photobiont absent (nonlichenized) **23**
- 23a.** Capitula flat (compressed), fan-shaped; apothecia <0.6 mm tall, KOH+ red enhanced in a wet mount; ascospores 4-celled; only on *Betula* spp. in Newfoundland, also known to rarely occur on *Sorbus* spp. elsewhere *Phaeocalicium matthewsianum*
- 23b.** Capitula not flattened; ascospores ≥(2–)4-celled; on *Abies balsamea*, *Alnus incana* ssp. *rugosa*, or *Picea* spp. **24**

- 24a. Apothecia >1.5 mm tall, flexuous; ascospores 4–6-celled, on *Picea* spp. bark *Stenocybe flexuosa*
- 24b. Apothecia <1.5 mm tall, straight; ascospores 2–4-celled, on the bark of *Abies balsamea* or *Alnus incana* ssp. *rugosa* 25
- 25a. Apothecia <1.5 mm tall, ascospores 4-celled, on *Abies balsamea* bark *Stenocybe major*
- 25b. Apothecia <0.5 mm tall, mature ascospores 4-celled, but often only 2-3 celled, on *Alnus incana* ssp. *rugosa* bark *Stenocybe pullatula*
- 22b. Mature ascospores 2-celled; photobiont present or absent 26 (also see lead 25)
- 26a. Photobiont trebouxoid; ascospores brown to dark brown; in a wet mount mature spores mostly outside of asci; corticolous or lignicolous, not lichenicolous. 27 (*Calicium*)
- 27a. Apothecia with yellow pruina on the excipula; usually on lignum, rarely on bark. *Calicium trabinellum*
- 27b. Apothecia with white pruina, epruinose, or a brown pruina-like pigment 28
- 28a. Apothecia with white pruina on the excipula; on bark and lignum 29
- 29a. Apothecia IKI+ blue in a wet mount *Calicium lenticulare* (Fig. 2B)
- 29b. Apothecia IKI- *Calicium glaucellum* (Fig. 2A)
- 28b. Apothecia epruinose or with a brown pruina-like pigment 30
- 30a. Apothecia epruinose; on lignum *Calicium abietinum* (Fig. 2C)
- 30a. Apothecia with a brown pruina-like pigment on the upper portions of the stalk and excipula; on bark and lignum 31
- 31a. Thallus usually immersed, if visible then thin and grey-green; mature ascospores <11 µm long; asci cylindrical, >30 µm long *Calicium salicinum*
- 31b. Thallus usually well developed, thick, granular to slightly verrucose, green; mature ascospores 12-14 µm long; asci clavate, <30 µm long *Calicium viride*
- 26b. Photobiont absent; lichenicolous, resinicolous, or lignicolous; ascospores pale brown to brown; in wet mounts mature spores mostly inside of asci 32 (*Chaenothecopsis*)
- 33a. Apothecia pruinose, <0.4 mm tall 34
- 34a. On the resin of *Picea* spp.; apothecia with grey pruina throughout *Chaenothecopsis marcinea*
- 34b. Lichenicolous, on *Arthonia leucopellaea*; upper portions of apothecia covered with yellow-green pruina *Chaenothecopsis dibbleandersoniarum*
- 33b. Apothecia epruinose, <1.2 mm tall 35
- 35a. Apothecia in wet mount turning green with the addition of KOH 36
- 36a. On the thallus of *Chaenotheca chrysocephala*; apothecia <1.2 mm tall; ascospores <9 µm long *Chaenothecopsis consociata*
- 36b. Parasitizing free-living algae and on the thallus of other species of *Chaenotheca*, but never on *C. chrysocephala*; ascospores <7 µm long; apothecia <1.4 mm tall *Chaenothecopsis viridireagens*
- 35b. Apothecia KOH- or KOH+ red in a wet mount 37
- 37a. Apothecia <0.6 mm tall, upper portions (top of the stalks and bottom of the capitula) KOH+ red (reaction fleeting); ascospores <8.5 µm long; lignicolous and on the thalli of *Chaenotheca* spp. *Chaenothecopsis pusiola*
- 37b. Apothecia <1.1 mm tall, KOH-, but the red hue of the stalk in a wet mount can be enhanced by the addition of KOH; ascospores <9 µm long; on bark and lignum *Chaenothecopsis debilis*

CONCLUSION

Here we have increased the number of calicioid species known from the Island of Newfoundland from 12 to 34. There are two species that were previously collected that we did not find, *Calicium viride* Pers. (reported as *C. hyprellum* Ach. by Macoun (1902), which we presume to be a lapsus for *C. hyperellum*) and *Chaenothecopsis dibbleandersoniarum* Selva collected at Hall's Gullies on the Avalon

Peninsula during the Tuckerman Workshop in 2007 (*Buck 52424* and *Lendemer 10129*, both NY[n.v.]). Eckfeldt (1895) also reported *Cyphelium tigillare* (Ach.) Ach. (as *Acolium tigillare* (Ach.) DeNot.) from Newfoundland or Labrador, but the location where the voucher was collected was not specified. We expect additional calicioid species will be found in Newfoundland as five of the nine ecoregions on the Island were not visited during our study.

Calicioids are particularly sensitive indicators of forest ecosystem integrity and continuity (Tibell 1992, Selva 2003). As a result, these taxa can be used to help forest managers identify areas of high conservation value and better understand the impact of management strategies (McMullin et al. 2008, 2013; Lõhmus & Lõhmus 2011). The first step in using calicioids to inform management decisions is to develop baseline data as we have done here (Reid & Miller 1989, Environment Canada 1995, Powell et al. 2000). In the future we intend to study habitat requirements for calicioids in Newfoundland and how forest management practices can better incorporate the conservation of these habitats.

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Studies in Lichens and Lichenicolous Fungi – No. 20: Further notes on species from the eastern North America

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ABSTRACT. – *Arthothelium lichenale* is placed in synonymy with *Mycoporum compositum*. The morphological distinctions between *Collema pustulatum* and *Leptogium apalachense* are discussed and the North American distributions of the species are revised. The distribution of *Lecidea roseotincta* in North America is extended to include the central and southern Appalachian Mountains. The distribution of *Lecidella subviridis* is expanded in northeastern North America. *Pyrenula reebiae* is placed in synonymy with *P. leucostoma* and both species are illustrated and discussed. *Pyrenula shirabeicola* is removed from synonymy with *P. pseudobufonia* and both species are illustrated and discussed. The following taxa are newly reported from North America: *Calvitimela cuprea* (Canada, Newfoundland & Labrador), *Hypotrachyna consimilis* (U.S.A., North Carolina), *Schismatomma graphidioides* (U.S.A., Alabama and New Jersey).

KEYWORDS. – Biogeography, Collemataceae, North American Checklist, Lecanoraceae, Lecideaceae, Parmeliaceae, Pyrenulaceae, sterile crust.

INTRODUCTION

As a result of fieldwork carried out throughout eastern North America, particularly in the southern Appalachian Mountains, we have studied new collections that prompted us to reexamine our understanding of recognized species, their distributions, and ecologies. Routine curation of the herbarium at the New York Botanical Garden led to similar studies, as has the identification of specimens that were newly donated to the herbarium. While such studies typically result in discrete taxonomic or floristic publications, there are often also brief notes that merit publication but are not easily accommodated in a standalone contribution. Here we present a series of notes that fall into the latter category. We hope that these notes will be of use for those working in eastern North America, as well as towards maintaining the Checklist of North American Lichens (Esslinger 2015).

MATERIALS AND METHODS

Fieldwork and herbarium vouchers

This study is based largely upon the fieldwork conducted by the authors, together with their colleagues at The New York Botanical Garden (NY), where the majority of specimens examined for this study have been deposited. These data and observations were complemented by reference material already available at NY, and supplemented by loans from DUKE, NYS and TNS. Study of material from H-ACH was also carried out.

Morphological and chemical study

The morphology of specimens was examined following the techniques of microscopy outlined by Lendemer (2011b). Chemistry was studied with standard spot test reagents (K, C, P and UV) following

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Brodo et al. (2001) and with Thin Layer Chromatography using Solvents A or C and the Peanut Butter Jar method outlined by Lendemer (2011a).

DNA extraction, amplification, and sequence generation

Molecular data (one mtSSU and one nrITS sequence) were generated from a voucher of *Lecidea roseotincta*. Subsamples used for DNA extraction were those used in TLC analyses above such that the chemistry and identification of the vouchers had been confirmed. DNA extraction, PCR amplification, and sequence assembly followed the methods of Hodkinson and Lendemer (2012). Distance metrics between the newly generated sequences and those already deposited in GenBank were calculated in PAUP* 4.0b10 (Swofford 1998).

NOTE I – ARTHOTHELIUM LICHENALE IS CONSPECIFIC WITH MYCOPORUM COMPOSITUM

Mycoporum compositum (A. Massal.) R.C. Harris in Egan, Bryologist 90(2): 164. 1987. \equiv *Bottaria composita* A. Massal., Miscell. Lichenol. p. 43. 1856. \equiv *Pyrenastrum compositum* Hampe nom. nud. in syn. Miscell. Lichenol. p. 43. 1856. **TYPE:** Ad cort. Chinae [Cinchonae] (VER!, holotype).

= *Arthothelium lichenale* (Peck) M.E. Barr [as '*lichenalis*'], in Barr, Rogerson, Smith & Haines, Bull. N.Y. St. Mus. 459: 28. 1986. \equiv *Sphaeria lichenalis* Peck, Bot. Gaz. 5:36. 1880. \equiv *Pleospora lichenalis* (Peck) Sacc., Syll. Fung 2: 258. 1883. **TYPE: U.S.A. VERMONT:** sine loc., sine date, on bark of *Betula*, C.G. Pringle 381 (NYS-f1703!, lectotype, **designated here**).

Discussion. – While reviewing some fungal literature we recently came across *Arthothelium lichenale*, a name not presently included on the North American checklist (Esslinger 2015). We borrowed the type material from NYS and found that it was moribund but nonetheless readily identifiable as *Mycoporum compositum* based on the presence of multilocular perithecioid ascomata and muriform ascospores (Figure 1). Interestingly Peck (1880) not only noted the perithecial nature of the ascomata but also that they were multilocular: “sometimes two or three [perithecia] are seriatly crowded or confluent”. Barr et al. (1986) reported ascospores $29.5\text{--}33 \times 10\text{--}12 \mu\text{m}$ in size, and these were likely somewhat immature. The few ascospores that we measured, although moribund, were larger ($35.0\text{--}41.0 \times 12.0\text{--}14.5 \mu\text{m}$) than those reported by Barr et al. (1986) and well within the accepted range for *M. compositum* ($30\text{--}38 (-43) \times 12\text{--}17(-18) \mu\text{m}$ *fide* Harris (1995)). The name is placed in synonymy with *M. compositum* here.

Selected additional specimens of *Mycoporum compositum* examined. – **CANADA. NOVA SCOTIA.** QUEENS CO.: Kejimikujik National Park, along E shore of Kejimikujik Lake near inlet from Grafton Lake, 9.v.1999, on *Acer*, R.C. Harris 43109 (NY). **U.S.A. FLORIDA.** FRANKLIN CO.: Apalachicola National Forest, FL65 4.8 mi N of Sumatra, 3.v.1990, on bark, R.C. Harris 25019 (NY). GILCHRIST CO.: Waccasassa Flats, along CR232 ~3 mi E of US129, 5.xii.1993, on *Ilex*, R.C. Harris 31705 (NY). OKALOOSA CO.: 1.2 mi W of FL85 on Antioch Rd./CR4, 5.v.1990, on bark, W.R. Buck 17912 (NY). **MAINE.** KENNEBEC CO.: Mud Pond, ~3 mi SW of Litchfield, 19.ix.1987, on *Acer*, R.C. Harris 20894 (NY). **MASSACHUSETTS.** WORCESTER CO.: Spencer, 1884, on bark, G.E. Stone s.n. (NY). **NEW YORK.** WASHINGTON CO.: Shushan, 12.v.1906, on bark, F. Dobbin s.n. (NY). **NORTH CAROLINA.** GRAHAM CO.: Nantahala National Forest, Cherohala Skyway/NC 143, Mudd Gap, 1.x.1997, on *Fagus*, R.C. Harris 41046 (NY). HAYWOOD CO.: Great Smoky Mountains National Park, Cataloochee Divide Trail 0–0.25 mi SE of Polls Gap, 7.viii.2012, on *Acer*, J.C. Lendemer 32899 & E.A. Tripp (NY). MONTGOMERY CO.: Black Ankle Bog Preserve, 19.iv.2008, on *Quercus* sapling, G.B. Perlmutter et al. 1443 (NY). **TENNESSEE.** DICKSON CO.: US70 2 mi W of White Bluff, 12.vi.1960, on bark, G.T. Johnson s.n. (NY). SEVIER CO.: Great Smoky Mountains National Park, summit area of Mt. LeConte, 9.x.2011, on old *Betula*, J.C. Lendemer et al. 30413 (NY). **WEST VIRGINIA.** POCAHONTAS CO.: Watoga State Park, Brooks Memorial Arboretum, 1.x.2000, on *Acer*, R.C. Harris 44010 (NY).

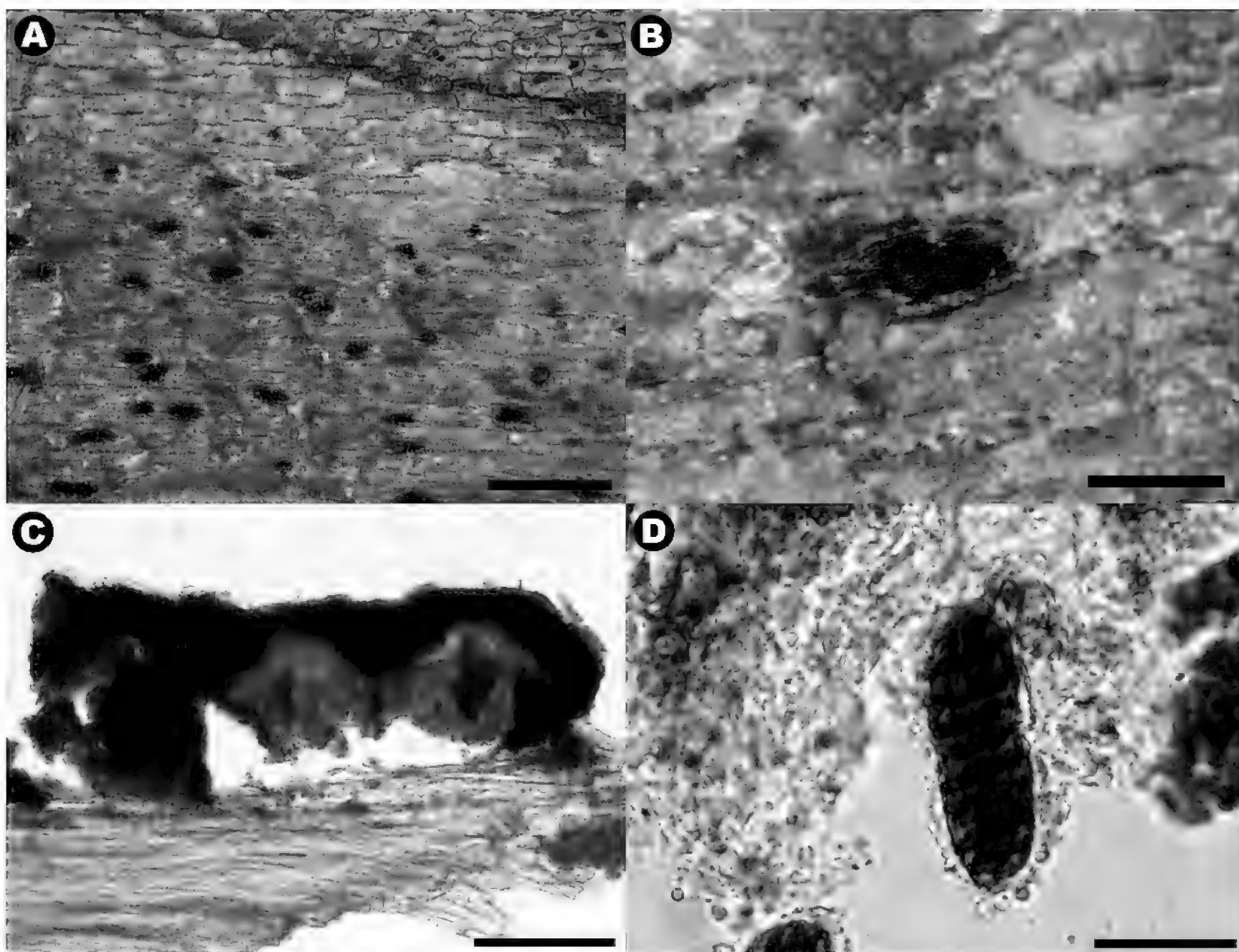


Figure 1. Morphology of the lectotype of *Arthothelium lichenum*. A, gross morphology of the thallus and ascomata. B, detail of compound (i.e., multilocular) ascomata. C, transverse section of multilocular ascoma illustrating multiple chambers. D, moribund ascospore that has begun to collapse. Scales = 2.0 mm in A, 0.4 mm in B, 100 μ m in C, 20 μ m in D.

NOTE II - *CALVITIMELA CUPREA* NEW TO NORTH AMERICA

Calvitimela cuprea Haugan & Timdal in Bendiksby, Haugan, Spribille & Timdal, Mycologia 107: 1180. 2015. **TYPE: NORWAY. HEDMARK:** Tynset, Fådalsgruva, former mine in Mount Gruvkletten, 17.vi.2012, on rock, M. Bendiksby et al. ET12642 (O[n.v.], holotype).

Discussion. – While inventorying the lichens of the northern tip of the Northern Peninsula of Newfoundland in 2007, the first author encountered an unusual saxicolous crustose lichen with distinctive white areoles and dark blue-black soredia that were formed in irregularly shaped soralia (Figures 2A–D). The species grew on ultramafic rocks and produced atranorin and substances of the stictic acid aggregate together with accessory norstictic acid. Initial attempts to identify the specimen were unsuccessful, and as such it was filed away in the undetermined sterile crustose lichens at NY. Subsequently when indexing the recent contribution on *Calvitimela* by Bendiksby et al. (2015) the first author made the connection between *C. cuprea*, which was newly described therein, and the specimen collected in Newfoundland. Further study confirmed that the material was conspecific with *C. cuprea* and thus represents the first report from North America. Previously *C. cuprea* was known only from Norway and Sweden (Figure 2E), mostly from the sites of former copper or nickel mines where metal-rich rocks would have occurred. The discovery of this species in coastal northern Newfoundland, also on metal-rich ultramafic rocks, is not surprising given the biogeographic affinities of the lichen biota of that region (Ahti 1983).

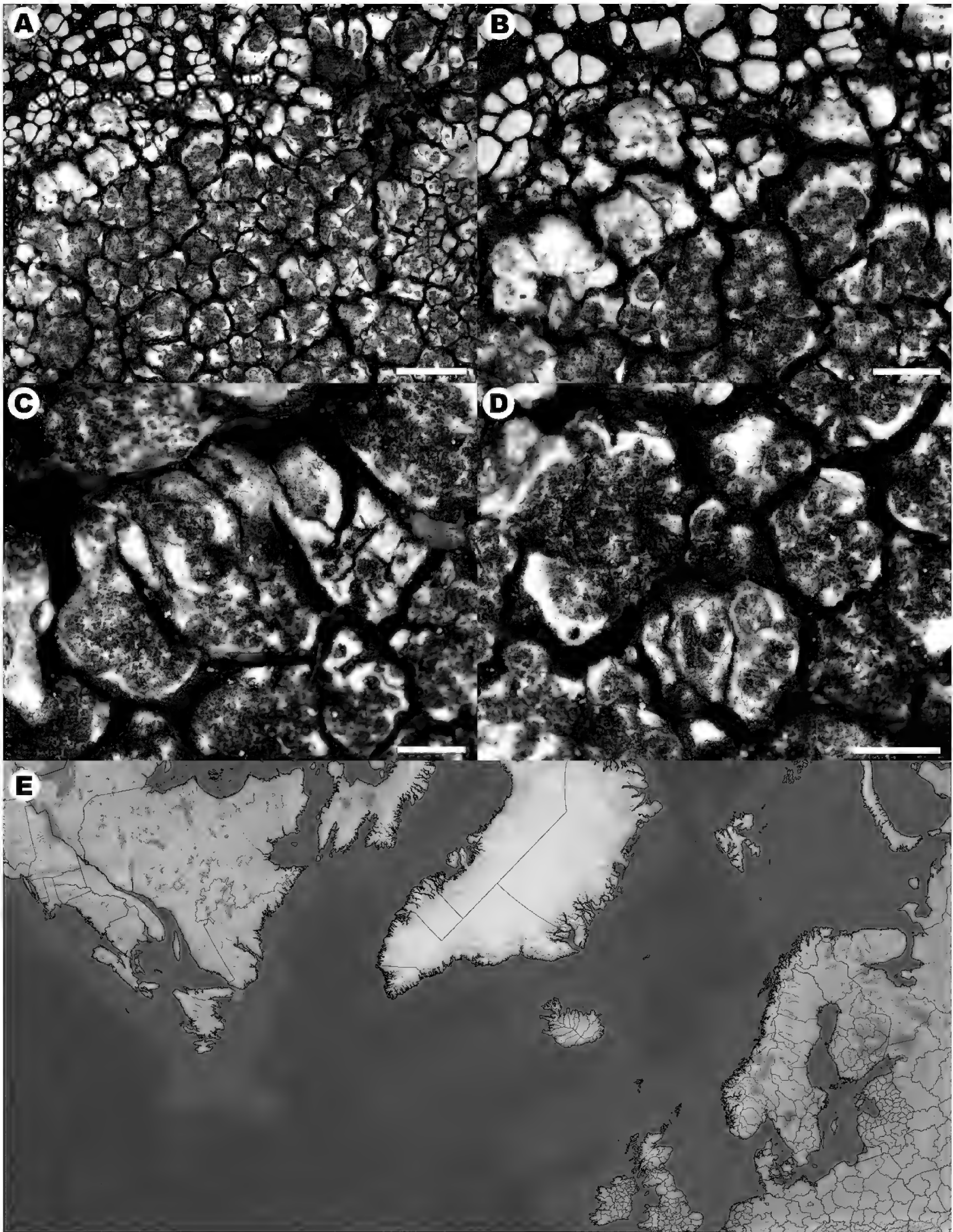


Figure 2. Morphology (all from *Lendemer 10688*) and geographic distribution of *Calvitimela cuprea*. A, gross morphology of the thallus. B, detail of thallus margins. C and D, detail of irregularly shaped areoles and soralia with blue-black soredia. E, geographic distribution based on specimen examined for this study and records from the protologue. Scales = 2.0 mm in A, 1.0 mm in B, 0.5 mm in C and D.

Specimen examined. – **CANADA. NEWFOUNDLAND AND LABRADOR:** Island of Newfoundland, Northern Peninsula, hills above town of Quirpon, 18.viii.2007, on rock, J.C. Lendemer 10688 & A. Moroz (MSC, NY).

NOTE III - *HYPOTRACHYNA CONSIMILIS* NEW TO NORTH AMERICA

Hypotrachyna consimilis (Vain.) Hale, Smithsonian Contr. Bot. 23: 28. 1975. \equiv *Parmelia consimilis* Vain., Acta Soc. Fauna Fl. Fenn. 7: 58. 1890. \equiv *Remototrachyna consimilis* (Vain.) Flakus, Kukwa & Sipman, in Flakus, Rodríguez Saavedra & Kukwa, Mycotaxon 119: 161. 2012. **TYPE: BRAZIL. MINAS GERAIS:** Caraça, 3-5.iii.1885, E. Vainio s.n. = *Lich. Bras. Exs. No. 1295* (TUR-V[n.v.], lectotype (designated by Hale 1975)).

Discussion. – During work in Great Smoky Mountains National Park in eastern North America the first author inventoried several old-growth stands of American hemlock (*Tsuga canadensis*) that had died as part of the recent infestation of Hemlock Woolly Adelgid (*Adelges tsugae*). Normally the canopies of trees in such stands would be inaccessible, however as the trees had died, numerous canopy branches littered the ground. Among the species found on such canopy branches was an unusual isidiate foliose lichen (Figure 3) that was quickly identified as a member of the genus *Hypotrachyna* in the field. Subsequent examination revealed the presence of protocetraric acid and the absence of caperatic acid the medulla, characters that combined with the presence of isidia did not readily fit any species presently known from the region (Lendemer et al. 2013). Review of the literature led to the identification of the specimen as *H. consimilis*, a species that is rare but widespread in montane areas of the West Indies and Central America (Sipman et al. 2009), also occurring in northern South America, and southeast Asia (Kurokawa & Lai 2001, Louwhoff & Elix 2002, Sipman et al. 2009). This is the first report of *H. consimilis* from North America.

While we did not detect orange pigments in the medulla, such pigments have been reported to be inconsistently present in *H. consimilis* and are likely irregularly produced in the thallus as is the case in other species such as *H. gondylophora* (Hale) Hale (Hale 1975, Sipman et al. 2009). The most similar member of the genus is *H. koyaensis* (Asah.) Hale, which differs in producing fatty acids in the medulla and in having much larger lobes (2-8 mm wide vs. 1-2 mm wide in *H. consimilis*). It should be noted that Flakus et al. (2012) transferred *H. consimilis* to the genus *Remototrachyna* Divakar & A. Crespo, however we retain the taxon in *Hypotrachyna* here pending study with molecular data.

Specimen examined. – **U.S.A. NORTH CAROLINA. HAYWOOD CO.:** Great Smoky Mountains National Park, Pretty Hollow Gap Trail 0.5-2.5 mi N of jct w/ Palmer Creek Trail, 20.x.2012, on fallen *Tsuga* branch, J.C. Lendemer 33340 & A. Moroz (NY).

NOTE IV – CLARIFICATION OF *COLLEMA PUSTULATUM* AND *LEPTOGIUM APALACHENSE*

Discussion. – *Leptogium apalachense* is an unusual foliose cyanolichen with thick, cylindrical, branch-like lobes and apothecia that are initially immersed in the thallus but eventually become raised and sessile (Sierk 1964). Since being described more than sixty years ago from a small number of collections in a limited geographic area of southeastern North America, the species has not been found outside of the region and is considered to be a rare endemic (Harris & Ladd 2005, Sierk 1964). Recently, while performing an initial conservation assessment for *L. apalachense*, we discovered that material filed under that name at NY included several misidentifications of *Collema pustulatum*. This led us to reexamine the material filed as *C. pustulatum*, and to the discovery that several specimens of *L. apalachense* had been misidentified as that taxon. As is illustrated here (Figures 4A & B) the two species are easily distinguished by their lobe morphology (broad and flat in *C. pustulatum* vs. narrow and nearly fruticose in *L. apalachense*), apothecia (immersed in *C. pustulatum* vs. initially immersed but quickly sessile and raised in *L. apalachense*), and also ascospores (submuriform in *C. pustulatum* vs. transversely septate in *L. apalachense*). Although the two species are readily separated even in the field, as is evidenced by our errors in identification, they can be confused when relying on accounts in the literature and in the absence of illustrations (the first color illustrations of *L. apalachense* are those published herein). Confusion is particularly likely in cases where thalli of *L. apalachense* have sparse or immature apothecia that have not yet emerged from the thallus to become distinctly raised and sessile. Further ascospores were lacking in m-

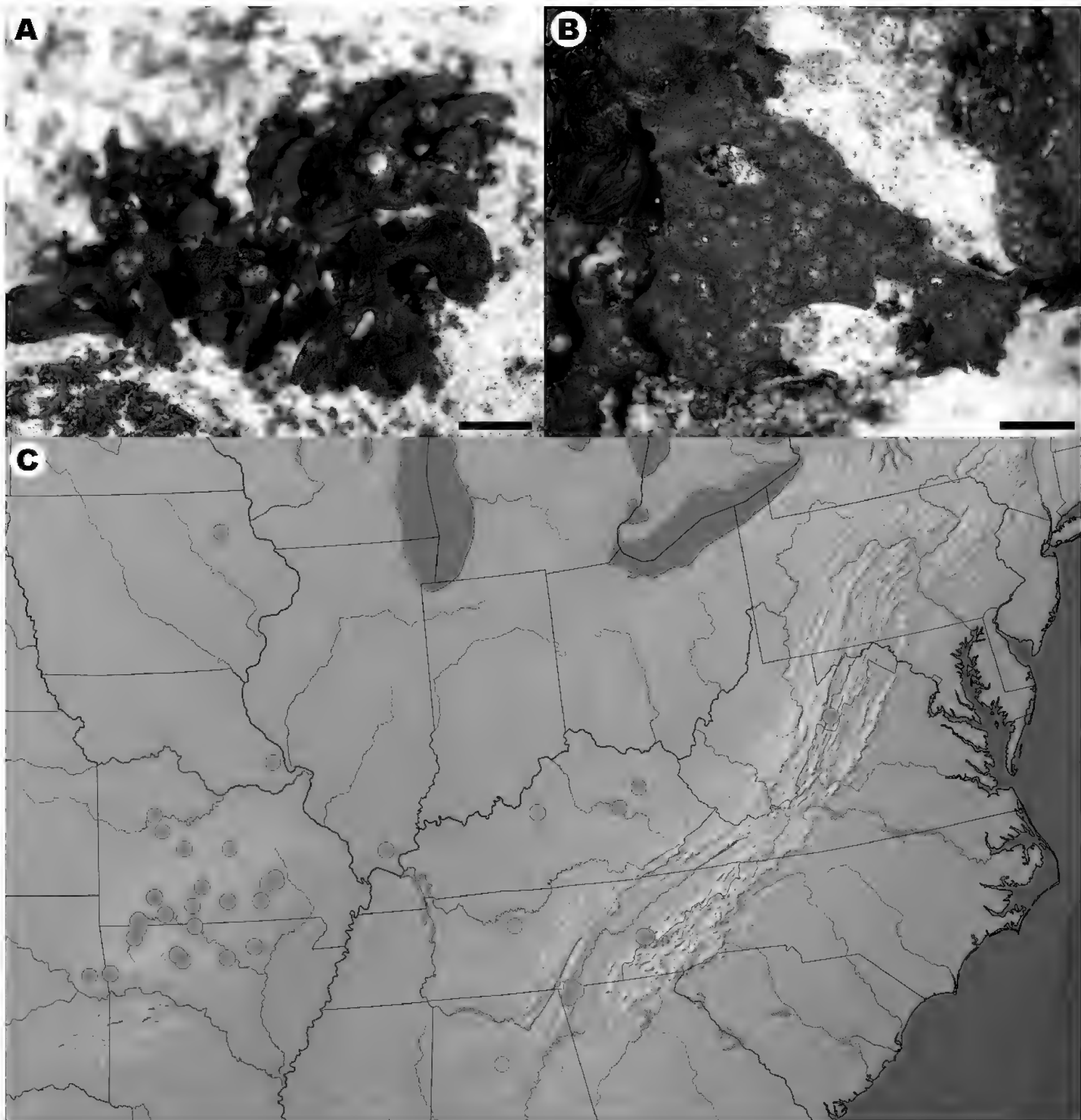


Figure 4. Morphology and distribution of *Collema pustulatum* and *Leptogium apalachense*. A, typical thallus of *L. apalachense* with partially immersed apothecia and narrow, nearly erect lobes (Beeching 13816). B, typical thallus *C. pustulatum* with immersed apothecia and broad lobes (Lendemer 26484). C, geographic distributions of *L. apalachense* (red dots) and *C. pustulatum* (yellow dots) based on specimens examined for this study.

-any of the specimens examined. Interestingly, based on the revised distributions presented here (Figure 4C) although the two species occur in the same general areas of eastern North America, they are largely allopatric and do not typically occur together even though both occur on calcareous rocks.

Selected specimens of Leptogium apalachense examined. – **U.S.A. ARKANSAS.** CARROLL CO.: along US62 just NE of the White River, 2.xi.2000, on dolomite, *W.R. Buck* 38728 (NY). **GEORGIA.** WALKER CO.: Lookout Mountain, E slope along SR136, 26.x.2012, on limestone, *S.Q. Beeching* 13816 (NY). **IOWA.** FAYETTE CO.: Fayette, ix.1893, on calcareous rock, *B. Fink s.n.* (NY), 1895, on calcareous rock, *B. Fink s.n.* (NY). **KENTUCKY.** ESTILL CO.: Daniel Boone National Forest, ca. 1.5 mi NW of Cottage Furnace of Campground on FSR230, 11.x.1995, on limestone, *R.C. Harris* 37011 (NY).

ROWAN CO.: Daniel Boone National Forest, bluffs at SE end of Cave Run Lake, 9.x.1995, on calcareous rock, *R.C. Harris 36850* (NY). **MISSOURI.** OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on calcareous rock, *W.R. Buck 44416* (NY). SHANNON CO.: Ozark National Scenic Riverways, vicinity of Rocky Falls off CR-NN, 24.ix.1990, on limestone, *W.R. Buck 18172* (NY). **OKLAHOMA.** CHEROKEE CO.: Cookson Wildlife Management Area, along Bolin Hollow Rd. at Jeff Baggett Field, 14.iv.2004, on limestone, *W.R. Buck 46494* (NY). **TENNESSEE.** HAMILTON CO.: Lookout Mt., sine date, *W.W. Calkins North American Lichens 19* (NY), 1892, *W.W. Calkins s.n.* (NY).

Selected specimens of Collema pustulatum examined. – U.S.A. ALABAMA. [County unknown].: sine loc., on calcareous rock, *T.M. Peters s.n.* (NY). **ARKANSAS.** BENTON CO.: Hobbs States Park-Conservation Area, along Page Sawmill Rd., 19.x.2005, on limestone, *R.C. Harris 51745* (NY). MARION CO.: Jones Point Wildlife Management Area, on peninsula in Bull Shoals Lake, 16.iv.2005, on calcareous rocks, *W.R. Buck 48712* (NY). NEWTON CO.: Buffalo National River, along CR84 at Hasty Low Water Bridge, 17.iv.2005, on calcareous rock, *W.R. Buck 48815* (NY). SHARP CO.: Strawberry River Preserve, off Barnes Rd./CR9, 3 mi NE of AR56, 25.x.2001, on calcareous rock, *R.C. Harris 45486* (NY). STONE CO.: Hell Creek Natural Area, ~3.5 mi NNE of Mountain View, 8.x.2010, on dolomite, *J.C. Lendemer 26484 & D. Ladd* (NY). **ILLINOIS.** JOHNSON CO.: Shawnee National Forest, Simpson Township's Barrens, 16.x.1993, on calcareous rocks, *W.R. Buck 24245* (NY). **IOWA.** FAYETTE CO.: Fayette, 1896, on limestone, *B. Fink s.n.* (NY). **KENTUCKY.** NELSON CO.: Bernheim Arboretum and Research Forest, ~7 mi NW Bardstown, 27.iii.2002, on limestone, *D. Ladd 23563 & M. Ladd* (NY). **MISSOURI.** OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on calcareous rock, *W.R. Buck 44393* (NY); Mark Twain National Forest, McCormack Lake Recreation Area, 10.x.1997, on calcareous rock, *W.R. Buck 32770* (NY). PHELPS CO.: Mark Twain National Forest, Roluf Spring woodland restoration area, 31.iii.1994, on dolomite, *D. Ladd et al. 17968* (NY). REYNOLDS CO.: Deer Run State Forest, 9.iii.1996, on dolomite, *T. Chadwell 140* (NY). SHANNON CO.: Ozark National Scenic Riverways, vicinity of Rocky Falls off CR-NN, 24.ix.1990, on limestone, *W.R. Buck 18163* (NY). **TENNESSEE.** BLOUNT CO.: Great Smoky Mountains National Park, Rich Mountain Trail near N end of Old Cades Cove Rd., 30.vi.2010, on dolomite, *R.C. Harris 56351* (NY); Great Smoky Mountains National Park, White Oaks Sinks, 13.x.2010, on calcareous rock, *J.C. Lendemer et al. 26847* (NY), *J.C. Lendemer et al. 26868* (NY). HAMILTON CO.: Lookout Mt., sine date, *W.W. Calkins 7* (NY). WILSON CO.: Cedars of Lebanon State Park, vi.1988, on calcareous rock, *J.P. Dey 17439* (NY). **WEST VIRGINIA.** PENDLETON CO.: South Branch Potomac River, Franklin Gorge, 29.v.2013, on limestone, *B.P. Streets 4750 & J. Vanderhorst* (NY).

NOTE V – AN EXPANDED DISTRIBUTION FOR *LECIDEA ROSEOTINCTA*

Lecidea roseotincta Coppins & Tonsberg, Nordic Journal of Botany 8: 415. 1988. **TYPE: NORWAY:** Sogn og Fjordene, Førde, the S slope of Mt Førdsnipa, between Skei and Skeistølen, 24.viii.1985, on *Alnus*, *T. Tonsberg 9351* (BG[n.v.], holotype).

Beginning with a field trip to West Virginia in 1976 the second author occasionally encountered an unusual corticolous crustose lichen (Figure 5A) during fieldwork in eastern North America. The species was very distinctive on account of its creamy white thallus, small black lecideine apothecia, psoromic acid, polysporous asci and hyaline medially constricted ascospores. In spite of the very distinctive characters of the species, a name was not immediately located through a review of the literature and thus specimens accumulated among the undetermined material at NY. Subsequently when the first author began to inventory the lichens of Great Smoky Mountains National Park, a very similar species was encountered in high elevation spruce-fir forests. Despite the presence of numerous apothecia on the thalli from the southern Appalachian Mountains, repeated study failed to locate mature asci with ascospores and thus the specimens also remained unidentified.

As fieldwork continued in the southern Appalachian Mountains we set out to determine the application of several *Lecidea* names that had previously been used in the region but we were nonetheless unfamiliar with (see Lendemer & Harris 2014). Among these names was *L. roseotincta*, a species that had been included in the lichen checklist for Great Smoky Mountains National Park based on unpublished reports by Tor Tønsberg that had been submitted to the National Park Service. Examination of the original

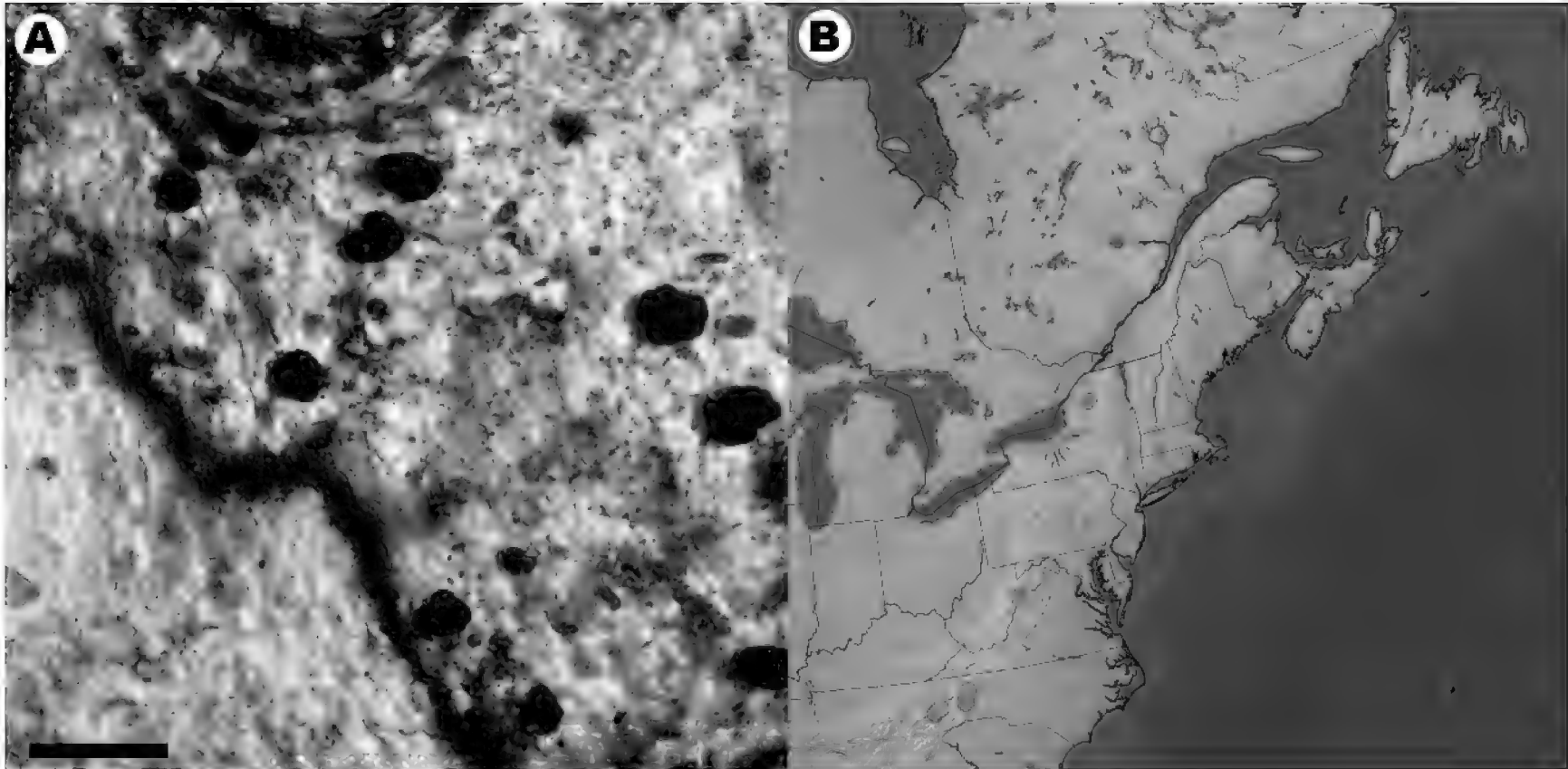


Figure 5. Gross morphology and North American geographic distribution of *Lecidea roseotincta*. A, typical thallus from the southern Appalachian Mountains with pale white coloration (Lendemer 43588, NY). B, geographic distribution in eastern North America based on specimens examined for this study (red dots) and those reported by Tønsberg (1993).

description of *L. roseotincta* (Coppins & Tønsberg 1998) revealed it matched our material in nearly every respect. The only differences were that none of our specimens had the pinkish or reddish coloration referred to in the protologue, and that while the only fertile Appalachian specimens had constricted ascospores, these were consistently simple rather than 1-septate. After several years of fieldwork we finally located material from the southern Appalachians that had abundant mature ascospores, and these matched the other Appalachian specimens in having consistently simple ascospores.

Given the differences in thallus coloration and ascospores septation we generated sequences from recently collected material in the southern Appalachians and compared them to reference sequences of European material in GenBank. The mtSSU sequence (GenBank KY123745) generated from southern Appalachian material was nearly identical to that of European material (GenBank HQ660575, from Norway), with a Jukes-Cantor distance of only 0.002. Similarly, the Jukes-Cantor distance between an nrITS sequence generated from southern Appalachian material (GenBank KY123744) and one from European material (GenBank HQ650670, from Norway) was 0.02985. The latter value being well within the distance threshold typically observed within, rather than between, species of lichenized fungi (e.g., Divakar et al. 2016, Lendemer 2011b, Lendemer & Harris 2014, Lendemer & Ruiz 2015, Nilsson et al. 2008). As such we treat the Appalachian material as *L. roseotincta*, extending its range considerably southward in North America (Figure 5B) where it was previously known only from the maritime regions of the eastern and western coasts (Tønsberg 1993).

Selected specimens examined. – **CANADA. NOVA SCOTIA.** HALIFAX CO.: S of Musquodoboit Harbour, along the road 1–2 km S of East Petpeswick, 11.vi.1991, on *Alnus*, T. Tønsberg 16840 (NY). **U.S.A. NEW YORK.** ST. LAWRENCE CO.: trail to Little River, ~1 mi SW of Star Lake, 5.ix.1981, on *Populus*, R.C. Harris 13915 (NY). **NORTH CAROLINA.** SWAIN CO.: Great Smoky Mountains National Park, true summit of Luftee Knob, 9.viii.2012, on *Viburnum*, J.C. Lendemer 32966 & E. Tripp (NY); Great Smoky Mountains National Park, Appalachian Trail 0–1 mi E of Pecks Corner, 15.x.2012, on *Betula* branch, J.C. Lendemer 33221 & E.A. Tripp (NY), on *Abies*, J.C. Lendemer 33249 & E. Tripp (NY); Great Smoky Mountains National Park, trail from Clingman’s Dome to Andrew’s Bald, 10.x.2011, on dead *Betula*, E. Tripp et al. 2225 (COLO, NY); Great Smoky Mountains National Park, Appalachian Trail near Charlies Bunion, 2.iv.2014, on *Betula*, J. Hollinger 3131B & N. Noell (NY); Great Smoky Mountains National Park, upper NW facing slopes and summit of Mount Hardison, 29.v.2014, on *Sorbus* branch, J.C. Lendemer 43320 & J. Toll (NY). **YANCEY CO.:** Pisgah National Forest, summit of Cattail Peak, 31.v.2014, on *Sorbus*, J.C. Lendemer et al. 43587 (NY), J.C. Lendemer et al. 43588 (NY), on

Abies branch, J.C. Lendemer et al. 43620 (NY); Pisgah National Forest, Deep Gap just S of camping area, Black Mountain Crest Trail 4.2 mi N of Mount Mitchell, 31.v.2014, on *Betula*, J.C. Lendemer et al. 43524 (NY); Mount Mitchell State Park, W slope of Mount Gibbs, 1.x.2014, on *Sorbus*, J.C. Lendemer 44016 & J. Allen (NY). **TENNESSEE.** CARTER CO.: trail to Roan High Knob, Roan Mountain, 5.x.1985, on *Abies*, R.C. Harris 18290 (NY). SEVIER CO.: Great Smoky Mountains National Park, Inadu Knob to Mt. Guyot summit, 14.x.2011, on *Abies*, E. Tripp et al. 2469 (COLO, NY); Great Smoky Mountains National Park, Mt. Love, 18.vi.2015, on *Sorbus*, J.C. Lendemer 45742 & J. Allen (NY); Great Smoky Mountains National Park, N-facing slope N of Appalachian Trail 0.2 mi S of summit of Mount Collins, 6.i.2016, on *Picea* branch, J.C. Lendemer et al. 46219 (NY); Great Smoky Mountains National Park, summit of Clingmans Dome, 6.i.2016, on *Sorbus*, J.C. Lendemer et al. 46189 (NY). **WEST VIRGINIA.** PENDLETON CO.: shoulder of Spruce Knob, 8.v.1976, on *Betula*, R.C. Harris 10600 (NY), R.C. Harris 10606 (NY).

NOTE VI – AN EXPANDED DISTRIBUTION FOR *LECIDELLA SUBVIRIDIS*

Lecidella subviridis Tønsberg, Sommerfeltia 14: 192. 1992. **TYPE: NORWAY. HORDALAND:** Os, Strøno, small peninsula E of Store Hestholmen, 9.iv.1989, on maritime *Calluna vulgaris*, T. Tønsberg 11480 (BG[n.v], holotype).

Discussion. – *Lecidella subviridis* is a sorediate crustose lichen (Figure 6A & B) that was originally described from Norway by Tønsberg (1992) and subsequently reported from many other regions of northern and central Europe (Czarnota & Kukwa 2004, Mrak et al. 2004, Prigodina-Lukosiene et al. 2003, Suija et al. 2001, Turk 2004, Wirth 1997). The species was also reported from North America by Coppins and Fryday (2006) based on several collections made by the second author in Michigan as a graduate student. While revising the keys to the lichens of the Michigan Straits Region (Harris 1977) in preparation for the 2015 Tuckerman Workshop, we were inspired to examine the holdings of sterile sorediate crustose lichens at NY for additional material of *L. subviridis*. Our search yielded several collections that extend the known distribution of the species in North America. A map of the distribution of the species in North America as presently known is presented here (Figure 6C).

The majority of North American collections we have seen were made on the bark of white cedar (*Thuja occidentalis*) in humid cedar swamps. A single collection from Pennsylvania was made on the bark of poplar (*Populus*), however the site was a humid seepy habitat. Although only a small number of collections are reported here, we suspect that the species is more widespread in cedar swamps throughout northeastern North America and has simply been overlooked. It can be recognized by the yellowish soredia that develop from eroding soralia immersed in the thallus, which give the superficial appearance of a leprose crustose lichen such as *Lepraria*, together with the production of arthothelin and thiophanic acid in addition to atranorin. The species is most likely to be confused with *Pyrrhospora quernea* (Dicks.) Körb. or *Lecanora expallens* Ach., both of which are morphologically similar and also produce xanthones. However, *P. quernea* does not produce atranorin and is not known to occur in eastern North America (Ryan et al. 2004), although a similar undescribed species is common in the southeastern Coastal Plain (Lendemer & Harris unpublished). *Lecanora expallens* produces usnic acid and zeorin in addition to xanthones, and is extremely rare in eastern North America, only known with certainty from coastal Maine (see cited specimens below).

Specimens of Lecidella subviridis examined. – **CANADA. ONTARIO.** LANARK CO.: N of Peneshula Rd. 0.6 mi W of int. w/ Cedar Cove Rd., 21.v.2011, on *Thuja*, J.C. Lendemer 28247 & R.E. Lee (NY). **ESTONIA.** SAARE CO.: Kärlaa Comm., Mönnusta, 2.vii.2011, on *Juniperus*, E. Leppik s.n. (NY). **NORWAY. HORDALAND:** Lindås, E of Hindnesfjorden, 3.iv.1984, on deciduous tree, T. Tønsberg 8594 (NY). **U.S.A. MICHIGAN.** DELTA CO.: ~0.3 mi S of Portage Bay Campground, 19.ix.1976, on *Thuja*, R.C. Harris 11954 (NY). OSCODA CO.: East Branch of Big Creek (upstream from Mapes Rd.), 14.ix.1972, on *Thuja*, R.C. Harris 8351 (NY). **PENNSYLVANIA.** FOREST CO.: Allegheny National Forest, FR131 0.25 mi N of jct w/ FR378, 9.ix.2010, on *Populus*, J.C. Lendemer 25013 (NY). **VERMONT.** CALEDONIA CO.: Wheelock Farm, NW shore of Flagg Pond, 22.x.2010, on *Thuja*, J.C. Lendemer 27510 & M. Sundue (NY). **WISCONSIN.** VILAS CO.: Northern Highland State Forest, Trout Lake Conifer Swamp State Natural Area, 28.iv.2002, on *Thuja*, R.C. Harris 45914 (NY).

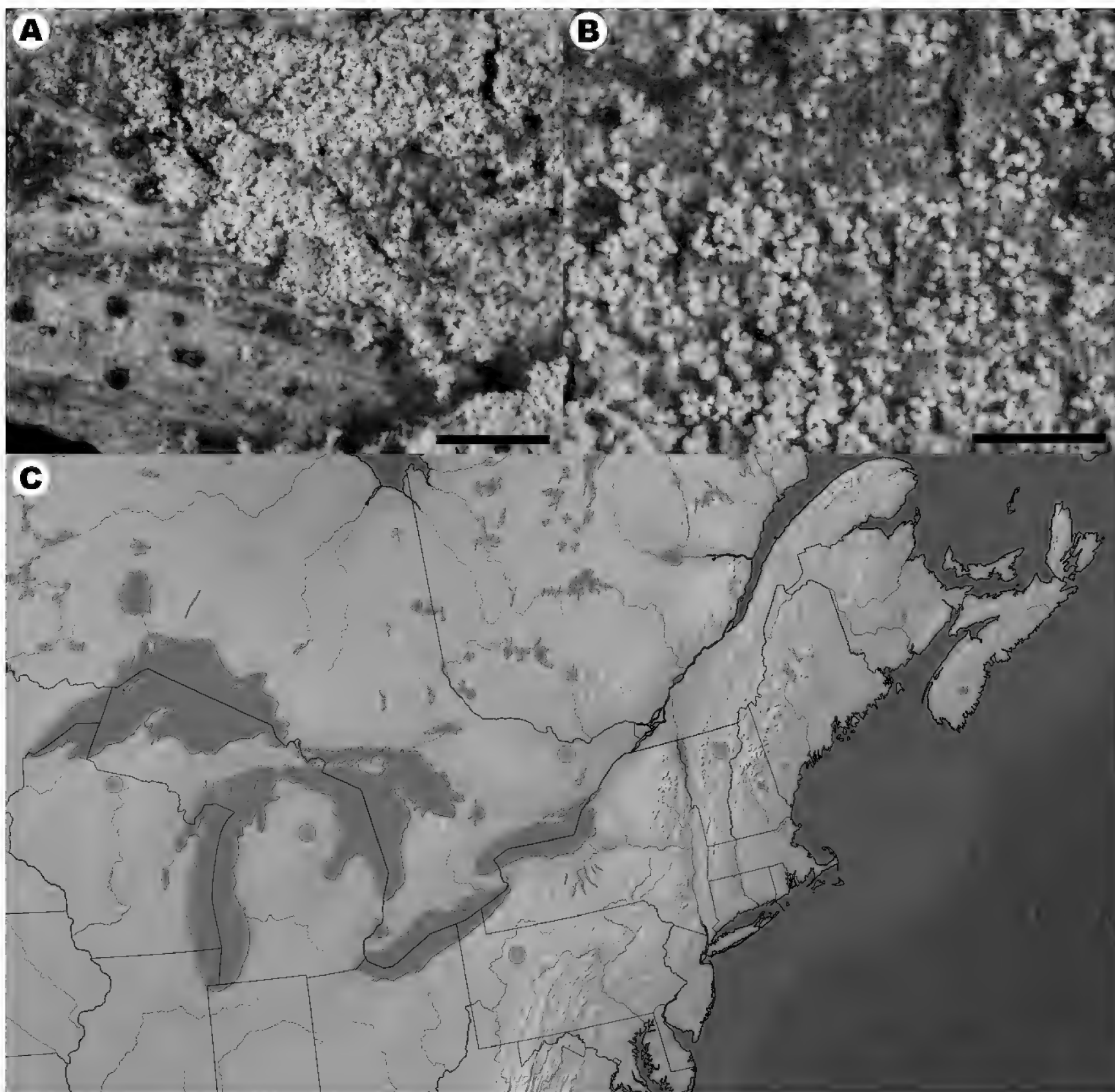


Figure 6. Morphology (both from *Harris 11954*) and North American distribution of *Lecidella subviridis*. A, gross morphology of the thallus giving the superficial appearance of a *Lepraria*. B, detail of thallus illustrating development of areoles burst into soredia and eventually dissolve to resemble a pile of granules. C, geographic distribution in North America based on specimens examined for this study. Scales = 1.0 mm in A, 0.5 mm in B.

Selected specimens of Lecanora expallens examined. – **CANADA. BRITISH COLUMBIA:** Queen Charlotte Island, Moresby Island, Sandspit Airport, 25.vii.1967, on log, *I.M. Brodo 12420 & M.J. Shchepanek* (NY). **U.S.A. CALIFORNIA.** LOS ANGELES CO.: Palos Verdes, Bluff Cove, 18.i.2012, on wood, *J. Hollinger 4391* (NY). SAN DIEGO CO.: Del Mar, St. Dieguito Lagoon, 15.x.2004, on wood, *K. Knudsen 1923 & A. Sanders* (NY). SAN LUIS OBISPO CO.: Morro Bay State Park, Estuary Preserve, 25.viii.2007, on wood, *K. Knudsen et al. 8988* (NY). **MAINE.** WASHINGTON CO.: Great Wass Island, Loop Trail, 7.vi.2010, on *Betula* base, *J.C. Lendemer 22596* (NY).

NOTE VII – NORTH AMERICAN RECORDS OF *PARMOTREMA ZOLLINGERI* ARE *P. OVEREEMII*

Parmotrema overeemii (Zahlbr.) Elix, Australas. Lichenol. 42: 23. 1998. \equiv *Parmelia overeemii* Zahlbr., Annals Cryptog. Exot. 1(2): 204. 1928. **TYPE: INDONESIA. JAVA:** Mt. Tjibodas, *Overeem 94* (W[n.v.], holotype; US[barcode 0068936]!, isotype).

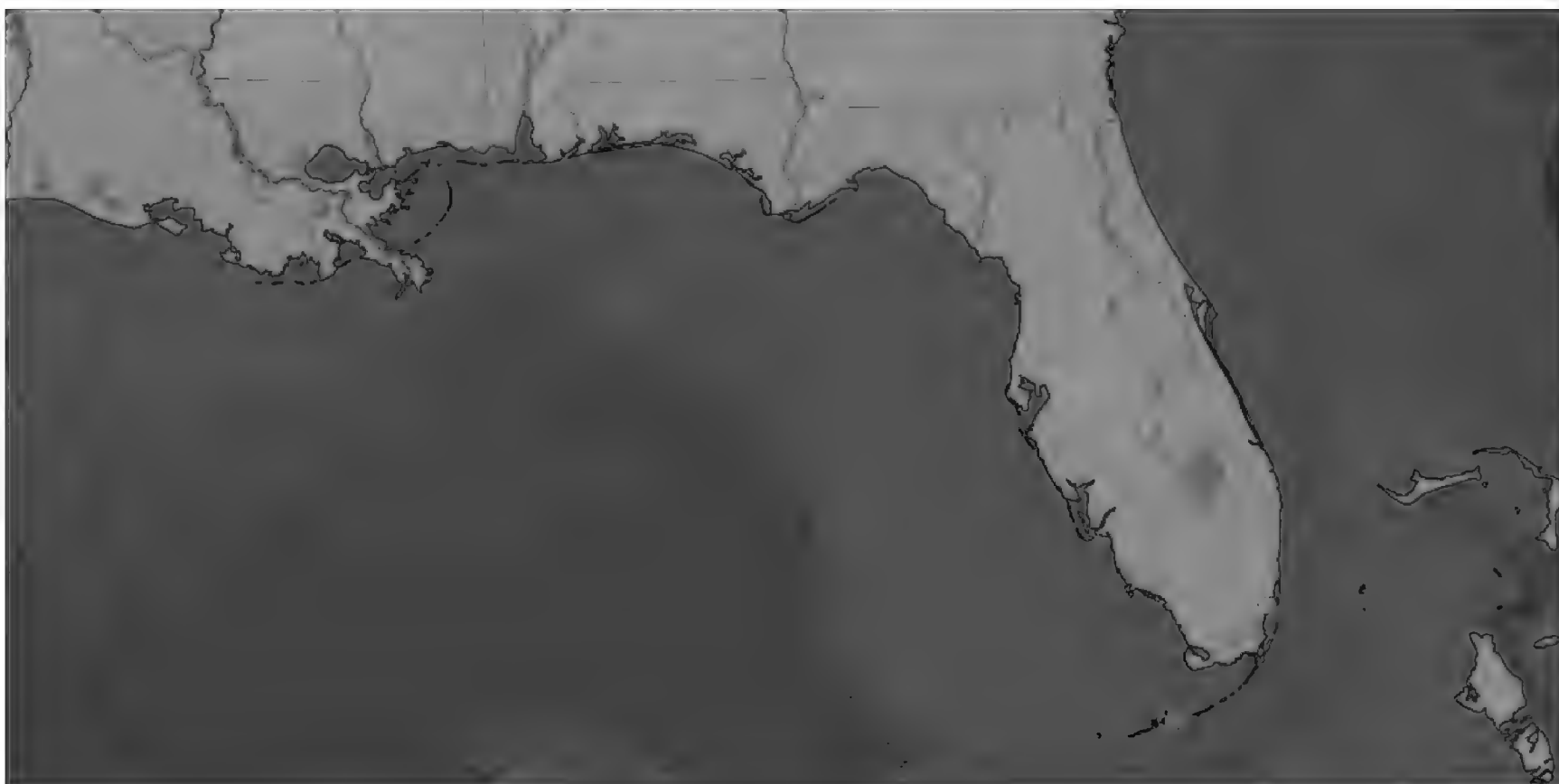


Figure 7. Geographic distribution of *Parmotrema overeemii* in North America based on specimens examined for this study.

Notes. – While preparing the NY holdings of *Parmotrema* for an herbarium expansion project we realized that specimens of *P. overeemii* from North America were filed as *P. zollingeri* (Hepp) Hale and had not been annotated in light of the revision of that taxon by Elix (1998). When Elix (1998) revised *P. zollingeri* he recognized that the type material was not chemically and morphologically congruent with the majority of specimens that had previously been referred to that name. This led to the recognition of seven separate species that could potentially be confused with *P. zollingeri*. Noting that *P. zollingeri* was still included on the North American checklist (Esslinger 2015) we revised the material at NY using the treatment proposed by Elix (1998). All of the specimens from North America that had been identified as *P. zollingeri* corresponded with the current concept of *P. overeemii* in having membranaceous, eciliate thalli that lacked lichenized diaspores and instead have abundant apothecia, sublageniform conidia, and protocetraric acid in the medulla. The ascospores were somewhat on the low end of the size range given by Elix (1998) for *P. overeemii* ($[13.7]–15.9–17.7–19.4–[21.1] \times [7.4]–8.0–8.9–9.8–[10.4] \mu\text{m}$ ($n=27$) in our material vs. $18–22 \times 8–12 \mu\text{m}$). Based on the above we report *P. overeemii* for the first time from North America and suggest that *P. zollingeri* should be removed from the North American checklist. We also report the species from scattered locations in the Caribbean and Central America. *Parmotrema overeemii* is a rare species in North America that appears to be known almost entirely from historical collections made in tropical Florida (i.e., the Everglades and Florida Keys; see figure 7). The only taxon likely to be confused with it is *P. submarginale*, which differs in having narrower lobes, smaller thalli, rod-shaped conidia, and marginal cilia (Harris 1995).

Selected specimens examined. – **BAHAMAS.** ABACO: opposite Cherokee Settlement, 31.xii.1904, on trees, *L.C.K. Brace* 1983 (NY). CROOKED ISLAND: Landrail Point, 9–23.i.1906, on living wood, *L.J.K. Brace* 4536 (NY). NEW PROVIDENCE: Lake Cunningham, 6.ii.1905, on bark, *E.G. Britton* 3306 (NY). SAN SALVADOR ISLAND: [Watling's Island], Cockburn Town and vicinity, 12–13.iii.1907, on dead branches, *N.L. Britton* 6217 & *C.F. Millspaugh* (NY). **CAYMAN ISLANDS:** Grand Cayman, 0.5 mi W of Old Isaacs, 25.iv.1956, on *Strumpfia*, *G.R. Proctor* 15233 (NY). **CUBA.** ORIENTE: Punta Piedra, Nipe Bay, 7.iii.1912, on bark, *N.L. Britton et al.* 12495 (NY). PINAR DEL RIO: Rio Ruao, 17.iii.1911, on *Quercus*, *N.L. Britton et al.* 10138 (NY). SANTA CLARA: Punta Diablo, Cienfuegos Bay, 19.iii.1910, on bark, *N.L. Britton* 5685 & *P. Wilson* (NY). SANTIAGO DE CUBA: La Gran Piedra, SE of peak, 2.iv.1982, on bark, *R.C. Harris* 14194 (NY, fatty acids present). **DOMINICAN REPUBLIC.** SAN PEDRO DE MACORIS: E side of Rio Soco, just N of Hwy between San Pedro de Macoris and La Romana, 19.i.1987, on bark, *R.C. Harris* 20208 (NY). **GUATEMALA.** PETÉN: La Libertad, 20.iii.1933, on bark, *C.L. Lundell* 2237 (NY). **HAITI.** DEPT. DE L'OUEST: Massif de la Selle, 3 km S of Kenscoff, 17.xi.1982, on bark, *W.R. Buck* 9257 (NY). **HONDURAS.** OLANCHO: trail between Catacamas and La

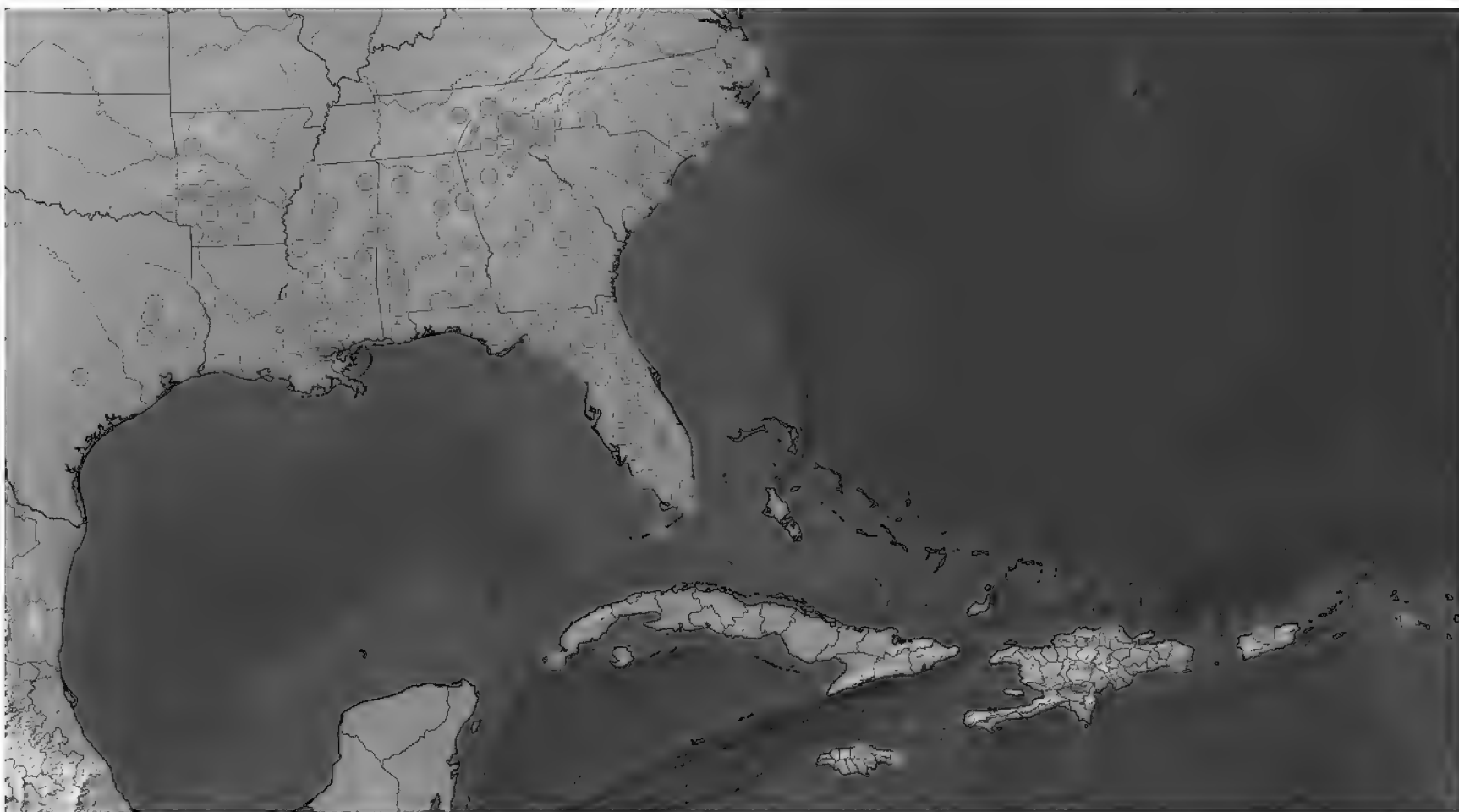


Figure 8. Distribution of *Pyrenula leucostoma* in North America and adjacent areas of the Caribbean based on specimens examined for this study.

Presa, 20–25.iii.1949, on bark, *P.C. Standley 18579* (NY). **JAMAICA.** ST. ANDREW PARISH: St. Helen's Gap to Morces Gap, 29.iii.1946, on humus, *C.B. Lewis L17-A* (NY). **PUERTO RICO:** Caribbean National Forest, Toro Negro Division, along Hwy 143, 3.5 mi E of Hwy 138, 27.ii.1981, on vine, *W.R. Buck 3749* (NY). **U.S.A. FLORIDA.** MIAMI-DADE CO.: Snapper Hammocks, 30.iii.1904, on *Sapodillo*, *E.G. Britton 488* (NY); Matheson Hammock, 3.ii.1981, on *Laguncularia*, *S. Stein s.n.* (NY); Nixon-Lewis Hammock, 16.iii.1915, on bark, *J.K. Small 5861 & C.A. Mosier* (NY); Royal Palm Hammock, 1.i.1916, on bark, *J.K. Small 7581* (NY). MONROE CO.: Big Pine Key, 27.ii.1911, on bark, *J.K. Small et al. s.n.* (NY), 21.iii.1915, *J.K. Small 5865 & C.A. Mosier* (NY).

NOTE VIII – *PYRENULA REEBIAE* IS CONSPECIFIC WITH *P. LEUCOSTOMA*

Pyrenula leucostoma Ach., Syn. meth. lich. 124. 1814. ≡ *Verrucaria leucostoma* (Ach.) Mont., Ann. Sci. Nat., Bot., sér. 2 19: 60. 1843. ≡ *Anthracotheceum leucostomum* (Ach.) Malme, Ark. Bot. 22A(11): 32. 1929. – **TYPE:** “Habitat in India Occid. super corticem Crotonis Cascarillae.” (H-Ach. 837, right hand piece marked “B”, **lectotype designated here!**).

= *Pyrenula reebiae* Aptroot & Gueidan, Mycol. Prog. 15: 7 [pg. 19]. 2016. TYPE: **U.S.A. NORTH CAROLINA.** BLADEN CO.: along Cape Fear River close to Carvers, near the ferry, 14.vi.2002, on bark, *V. Reeb 14-VI-0215* (DUKE!, holotype).

Notes. – Recently Gueidan et al. (2016) described *Pyrenula reebiae* on the basis of a single collection made in the Mid-Atlantic Coastal Plain of North Carolina. Examining the illustrations from that publication we were struck by the similarity to *P. leucostoma*, a familiar species common in southeastern North America (Figure 8) that we encountered frequently during our inventory of the Mid-Atlantic Coastal Plain. Given the similarity of the protologue of *P. reebiae* to our concept of *P. leucostoma*, as well as the fact that *P. leucostoma* was neither compared to *P. reebiae* nor included in the taxon sampling for the phylogeny published by Gueidan et al. (2016) we were inspired to borrow the type material to determine the application of the name.

Pyrenula leucostoma as we have known it is a variable species and one with large perithecia most of which are often moribund (the hymenium is often attacked by a fungus) or have immature hymenia (sometimes regenerating within an old melanized wall). Apparently new ascomata are continuously produc-

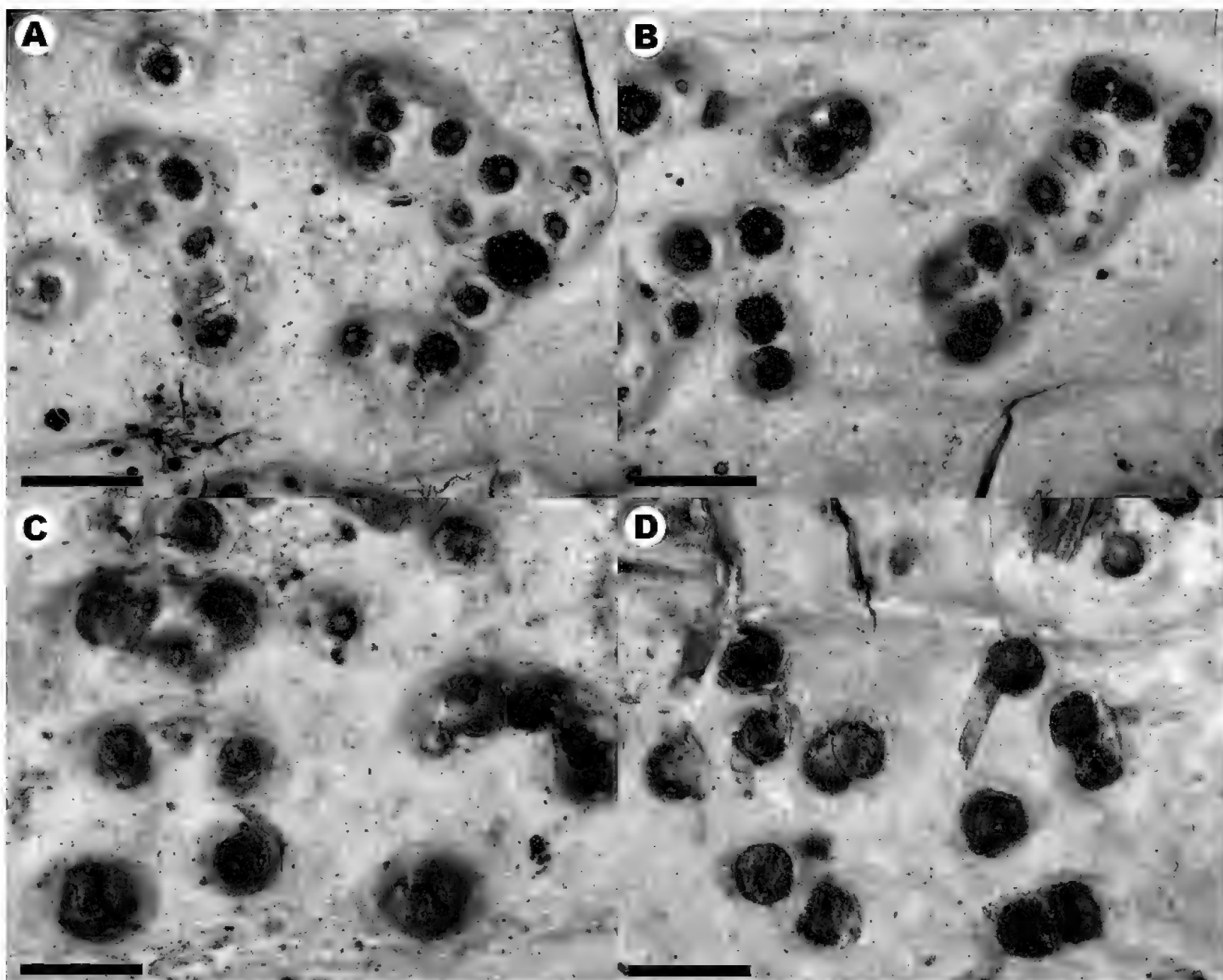


Figure 9. External morphology of *Pyrenula leucostoma*. A-C, variation in arrangement and clustering of ascoma in the holotype of *P. reebiae*. D, damaged and sterile ascoma from the holotype of *P. reebiae* that are typical of thalli of *P. leucostoma*. Scales = 2.0 mm in A, B and D; 1.0 mm in C.

-ed regardless of the existence of previous ascomata. This results in groups of two to several closely aggregated perithecia that can resemble compound ascomata which, even though simple ascomata are common on the same thallus, would have suggested placement in *Melanotheca* Fée (e.g., *M. cruenta* (Mont.) Müll. Arg. \equiv *P. cruenta* (Mont.) Vain.). Thus the aggregated ascomata noted in Gueidan et al. (2016) are not atypical of *P. leucostoma* (Figure 9). The ascospores of *P. leucostoma* are also variable and often only immature or overmature ascospores are present (Figure 10). Hymenial inspersion is also somewhat variable in that most specimens have a weakly inspersion hymenium with oil droplets concentrated in the lower portions of the hymenium. In our experience many species of *Pyrenula* have a small amount of scattered oil droplets in the hymenium. Nonetheless the inspersion that occurs in *P. leucostoma* is different from that of taxa such as *P. pseudobufonia* where the hymenium is always densely inspersioned.

When we examined the type of *Pyrenula reebiae* we were fortunate to find a small number of mature ascospores in the bottom of a moribund ascoma in a desiccated hymenium that was otherwise dominated by moribund ascospores. The ascospores, and the overall morphology of the type, are typical of *P. leucostoma*. Our concept of *P. leucostoma* is derived from authentic or isoelectotype material in UPS that was received from the Acharian herbarium (Figure 10A and B), and was identical to Acharian specimens that the second author has previously examined at BM, H-ACH and S. As far as we know *P. leucostoma* has never been formally typified and as such we select a lectotype here. Based on our study of *P. leucostoma* we suggest the pale coloration and pointed ends of the ascospores in the illustrations of *P. reebiae* published by Gueidan et al. (2016) represent immature ascospores. Although the small size (36–41

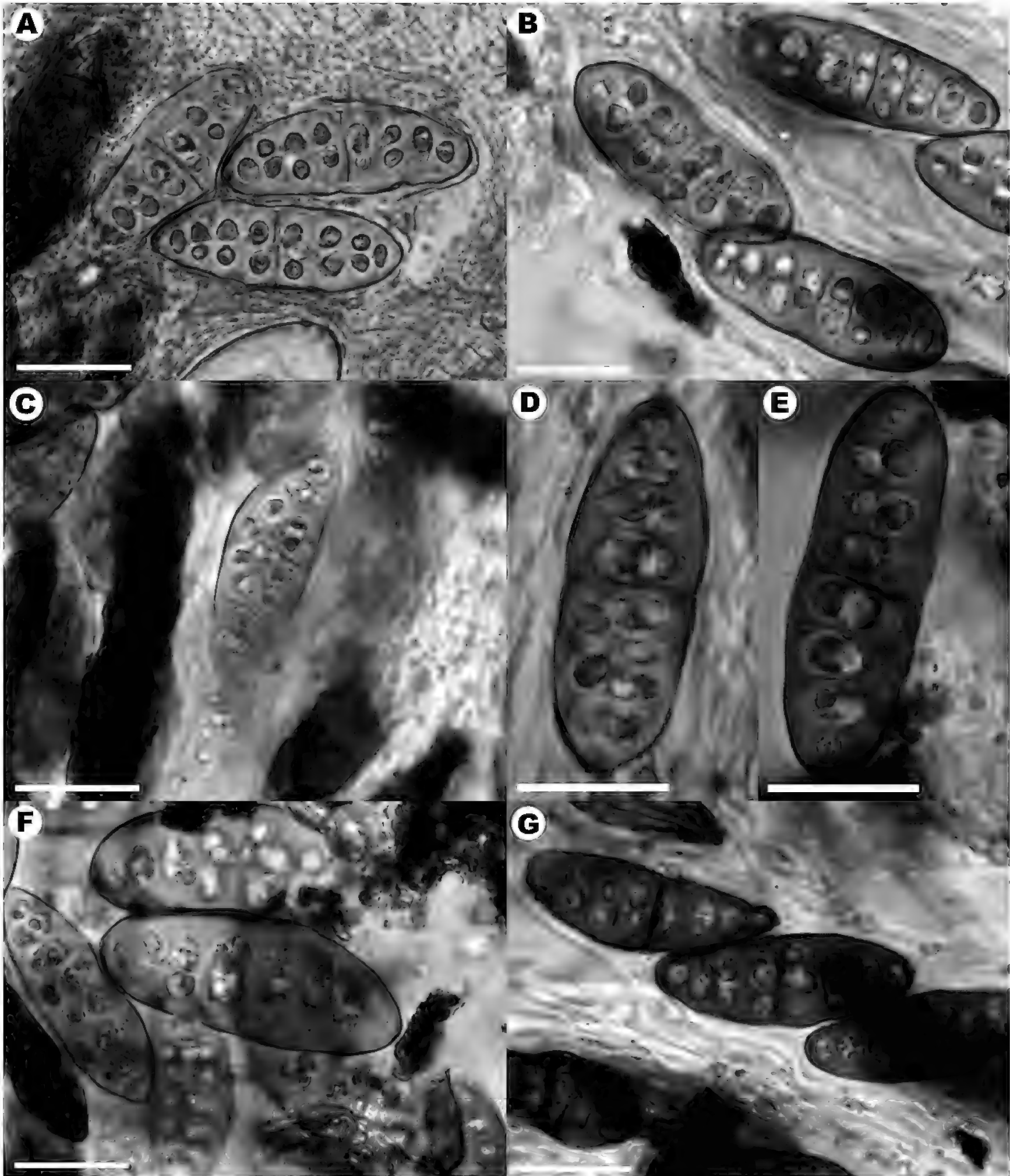


Figure 10. Comparison of ascospores from *P. leucostoma* (A and B, isolectotype, UPS) and the holotype of *P. reebiae* (C-G). A and B, typical mature ascospores of *P. leucostoma*. C, immature young ascospore from *P. reebiae* with atypical light coloration and pointed end. D-F, mature ascospores from *P. reebiae* that are typical of those of *P. leucostoma*. G, post-mature ascospores from *P. reebiae* where the internal contents of the ascospores have begun to degrade, the walls collapse, and the ends become somewhat pointed. Scales = 20 μ m.

× 10–13 µm) reported in the protologue of *P. reebiae* could support that hypothesis, the ascospores we measured were larger (45–55 × 15–22 µm) than reported in the protologue and thus very similar to the range given for *P. leucostoma* by Harris (1989; 45–60 × 16–22(–25) µm).

Selected specimens examined. – **CUBA.** PINAR DEL RIO: Corrientes Bay, 10–12.iii.1911, on bark, *N.L. Britton 9947 & J.F. Cowell* (NY). **DOMINICAN REPUBLIC.** PROV. ESPAILLAT: 7.5 km E of Gaspar Hernández, 24.i.1991, on bark, *R.C. Harris 26792* (NY). PROV. LA ALTAGRACIA: 5.5 km S of La Romana-Higüey Hwy on road to Bayahibe, 22.i.1991, on bark, *R.C. Harris 26601* (NY). **JAMAICA.** ST. THOMAS PARISH: S slope of Winchester Peak, 1.1 mi NW of Wheelerfield, 10.iv.1981, on bark, *W.R. Buck 5611* (NY). ST. ANN PARISH: Green Park in Claremont, 7.v.1953, on bark, *H.A. Imshaug 15889* (NY). **PUERTO RICO.** ARECIBO DISTR.: ~1 km N of Ciales on Hwy 149, 11.vi.1988, on bark, *R.C. Harris 22623* (NY). SANTURCE DISTR.: 3 mi E of Santurce, 1899, on bark, *A.A. Heller 450* (NY). **U.S.A. ALABAMA.** BALDWIN CO.: Upper Delta Wildlife Management Area, Zone A, 12.iv.2007, on *Quercus*, *W.R. Buck 51610* (NY). CLARKE CO.: Fred T. Stimpson Wildlife Sanctuary, 31.vii.2003, on *Ilex*, *W.R. Buck 44819* (NY). CLEBURNE CO.: Talladega National Forest, ~0.5 mi S of FSR548 at Shooting Range, 5.viii.2005, on *Carpinus*, *C.J. Hansen 1997* (NY). COVINGTON CO.: Conecuh National Forest, Solon Dixon Forestry Education Center, Cave Rd., 14.iv.2007, on *Quercus*, *R.C. Harris* (NY). DEKALB/MARSHALL CO.: Buck's Pocket State Park, 3.x.1998, on *Acer*, *W.R. Buck 34663* (NY). ESCAMBIA CO.: Conecuh National Forest, Solon Dixon Forestry Education Center, River Bluff Rd., 14.iv.2007, on *Carpinus*, *R.C. Harris 53427* (NY). HOUSTON CO.: 13 mi S of Dothan, 5.ii.1965, on bark, *G.T. Johnson* (NY). LAWRENCE CO.: Bankhead National Forest, Johnson Cemetery Trail and Sipsey Fork Trail off CR60, 4.vii.2010, on *Betula*, *E.A. Tripp et al. 1287* (NY). LEE CO.: Auburn, 15.ii.1896, on bark, *F.S. Earle s.n.* (NY). MARENGO CO.: along Sweetwater Creek, 1 mi SE of Sweetwater, 20.x.1964, on bark, *G.T. Johnson s.n.* (NY). PICKENS CO.: near Coal Fire, 25.v.1964, on bark, *G.T. Johnson s.n.* (NY). SAINT CLAIR CO.: near Pell City, 23.x.1964, on bark, *G.T. Johnson s.n.* (NY). WINSTON CO.: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork, 25.ix.1992, on *Ilex*, *R.C. Harris 28420* (NY). **ARKANSAS.** CALHOUN CO.: along Moro Creek, 5 mi SE of Fordyce, 19.x.1964, on bark, *G.T. Johnson s.n.* (NY). CLARK CO.: along Little Missouri Relief, 7 mi NW of Prescott, 25.iv.1964, on bark, *G.T. Johnson s.n.* (NY). CLEVELAND CO.: near Moro Bayou, near Fordyce, 3.vii.1964, on bark, *G.T. Johnson 5836* (NY). COLUMBIA CO.: 5 mi N of Magnolia, 25.i.1960, on bark, *G.T. Johnson s.n.* (NY). FRANKLIN CO.: Ozark National Forest, Boston Mountain Ranger District, Shores Lake, 16.iv.2004, on *Acer*, *W.R. Buck 46698* (NY). GARLAND CO.: near Charlton Recreation Area, 20 mi W of Hot Springs, 18.x.1964, on bark, *G.T. Johnson s.n.* (NY). GRANT CO.: 4 mi S of Sheridan, 19.x.1964, on bark, *G.T. Johnson s.n.* (NY). JEFFERSON CO.: US270 12 mi E of Pine Bluff, 3.i.1953, on bark, *G.T. Johnson 1087* (NY). MONTGOMERY CO.: Along Little Missouri River 4 mi. N of Camp Albert, 19.iv.1956, on bark, *G.T. Johnson s.n.* (NY). PIKE CO.: along Cassatat River, 16 mi. SE of Mena, 19.iv.1955, on bark, *G.T. Johnson s.n.* (NY). POLK CO.: Ouachita National Forest, Caney Creek Wilderness Area, side ravine of Short Creek, 18.v.2000, on bark, *C.M. Wetmore 84271* (NY). UNION CO.: along US82, 9 mi W of El Dorado, 24.i.1958, on *Ilex*, *G.T. Johnson s.n.* (NY). **FLORIDA.** ALACHUA CO.: 7 mi NW of Gainesville, 4.ii.1965, on bark, *G.T. Johnson s.n.* (NY). BAY CO.: N of CR388 at Econfinia Creek, 1.xii.1994, on *Acer*, *R.C. Harris 35687* (NY). CALHOUN CO.: W of SR71, 6.6 mi N of Gulf County line, 11.xii.1993, on *Ilex*, *R.C. Harris 32172* (NY). CITRUS CO.: St. Martins Marsh Aquatic Preserve, 5.xii.1996, on *Carya*, *R.C. Harris 39769* (NY). COLLIER CO.: Fakahatchee Strand State Preserve, vicinity of Ranger Station, 4.iii.2009, on *Ficus*, *J.C. Lendemer 15510* (NY). DE SOTO CO.: along CR 760 at Peace River, 1.2 mi W of US 17 at Nocatee, 29.iii.1998, on *Fraxinus*, *R.C. Harris 41991* (NY). DIXIE CO.: Big Bend Wildlife Management Area, Jena Unit, 4.xii.1996, on *Ilex*, *R.C. Harris 39678* (NY). FLAGLER CO.: along Co. Rd. 304 at Sweetwater Creek, 6.i.1996, on *Acer*, *R.C. Harris 37413* (NY). GULF CO.: N of Lake Grove Rd./SR22, 1.5 mi E of SR71 at Wewahitchka, 11.xii.1993, on *Acer*, *R.C. Harris 32201* (NY). HAMILTON CO.: Holton Creek Wildlife Management Area, 14.xii.1993, on fallen *Carya* branch, *R.C. Harris 32470-D* (NY). HIGHLANDS CO.: Hickory Hammock, 28.iii.1998, on *Ilex*, *R.C. Harris 41940* (NY). LAKE CO.: Ocala National Forest, Alexander Springs Creek at end of FSR552, 6.xii.1988, on *Acer*, *W.R. Buck 16772* (NY). LEE CO.: Caloosahatchee River State Recreation Area, 10.xii.1992, on *Ilex*, *R.C. Harris 30241-A* (NY). LEVY CO.: Goethe State Forest, Sand Slough, 4.xii.1996, on *Ilex*, *R.C. Harris 39686* (NY). LIBERTY CO.: FL20 1.7 mi W of Hosford, 28.xii.1990, on bark, *R.C. Harris 26077* (NY). MADISON CO.: 0.3 mi on dirt road W of CR150, 7.7 mi NNE of US90, 14.xii.1993, on *Ilex*, *R.C. Harris 32348* (NY). MIAMI-DADE CO.: Cutler, Deering Hammock,

15.xii.1919, on bark, *N.L. Britton 723 & E.G. Britton* (NY). OSCEOLA CO.: Bull Creek Wildlife Management Area, 9.i.1996, on bark, *W.R. Buck 29194* (NY). POLK CO.: 3 mi S of Fort Meade, 2.ii.1965, on bark, *G.T. Johnson s.n.* (NY). PUTNAM CO.: Ocala National Forest, old Johnson Field Campground along Oklawaha River, 7.xii.1988, on *Carpinus*, *R.C. Harris 23695* (NY). SEMINOLE CO.: along Econlockhatchee River at Little-Big Econlockhatchee Canoe Launch, 10.i.1994, on *Carpinus*, *R.C. Harris 37724* (NY). SUMTER CO.: along CR330, 1.1 mi ENE of CR48, just SE of Citrus County line at Withlacoochee River, 5.xii.1996, on *Acer*, *R.C. Harris 39821* (NY). SUWANNEE CO.: Peacock Springs State Recreation Area, 2.xii.1996, on *Ilex*, *R.C. Harris 39385* (NY). TAYLOR CO.: along CR361, 1.7 mi N of Keaton Beach, 3.xii.1996, on *Acer*, *R.C. Harris 39653* (NY). UNION CO.: Worthington Springs, 4.xii.1994, on *Acer*, *R.C. Harris 35978* (NY). WALTON CO.: along Bruce Creek at FL81, 30.xi.1988, on *Carpinus*, *R.C. Harris 23159* (NY). **GEORGIA.** BIBB CO.: near Lizella, 3.ii.1967, on bark, *G.T. Johnson s.n.* (NY). BURKE CO.: Boggy Gut Creek tract, N of GA56 Spur/River Rd., 15.iii.2010, on *Carpinus*, *J.C. Lendemer 22211* (NY). CANDLER CO.: Fifteenmile Creek Preserve, 22.xii.2009, on *Fagus*, *J.C. Lendemer et al. 21711* (NY). COFFEE CO.: Broxton Rocks Ecological Preserve, 16–17.xii.1993, on *Quercus*, *R.C. Harris 32715* (NY). EARLY CO.: Williams Bluff Preserve, 14.iv.2007, on *Ilex*, *J.C. Lendemer et al. 9297* (NY). GREENE CO.: Oconee National Forest, end of FSR1202 off GA15, 19.ix.1996, on *Tilia*, *R.C. Harris 38863* (NY). LUMPKIN CO.: 4 mi E of Suches, 5.ii.1967, on bark, *G.T. Johnson s.n.* (NY). PUTNAM CO.: Eatonton Granite Outcrop, along W shore of Oconee Lake, 8.x.1999, on *Acer*, *R.C. Harris 43723* (NY). RABUN CO.: Lake Burton Wildlife Management Area, vicinity of Popcorn Overlook, 17.ix.2006, on *Acer*, *J.C. Lendemer et al. 7638* (NY). SCHLEY CO.: 4 mi N of Ellaville, 3.ii.1967, on bark, *G.T. Johnson s.n.* (NY). TREUTLEN CO.: Berry Hill Bluff, N-facing bluff along Dead River at confluence with Oconee River, 18.iii.1995, on bark, *W.R. Buck 27608* (NY). **LOUISIANA.** EAST BATON ROUGE PARISH: 1 mi N of Zachary, ii.1960, on bark, *G.T. Johnson 6001* (NY). JEFFERSON DAVIS PARISH: 2 mi SE of Hayes, 27.vi.1964, on bark, *G.T. Johnson s.n.* (NY). NATCHITOCHES PARISH: Kisatchie National Forest, Longleaf Trail Vista, 28.v.1976, on *Acer*, *R.C. Harris 11416* (NY). RAPIDES PARISH: Kisatchie National Forest, Magnolia Recreation Area, 31.xii.1969, on bark, *R.S. Egan 7366* (NY). ST. HELENA PARISH: 4 mi N of Chipola, 29.v.1979, on *Prunus*, *S.C. Tucker 18668* (NY). ST. JOHN THE BAPTIST PARISH: 4 mi W of Reserve, 23.xi.1968, on bark, *G.T. Johnson 6420* (NY). ST. MARTIN PARISH: Bayou Capucin, 22.x.1894, on *Acer*, *A.B. Langlois 991* (NY). ST. MARY PARISH: Chatsworth Levee, near Franklin, 12.ix.1975, on *Acer*, *W.R. Buck B-583* (NY). ST. TAMMANY PARISH: 10 mi E of Covington, 16.vi.1939, on bark, *G.T. Johnson 2700 & H.N. Andrews* (NY). TANGIPAHOA PARISH: 4 mi E of Robert, 16.vi.1939, on *Ilex*, *G.T. Johnson 3025 & H.N. Andrews* (NY). **MISSISSIPPI.** ADAMS CO.: 15 mi S of Natchez, 6.iv.1953, on bark, *G.T. Johnson 1219* (NY). AMITE CO.: 2 mi S of Coles, 6.iv.1953, on bark, *G.T. Johnson 1204* (NY). CARROLL CO.: 18 mi E of Greenwood, 3.i.1953, on bark, *G.T. Johnson 1074* (NY). COPIAH CO.: 5 mi N of Wesson, 11.vi.1939, on bark, *G.T. Johnson 2352 & H.N. Andrews* (NY). DE SOTO CO.: ~4 mi E of Penton, 8.vi.1939, on bark, *G.T. Johnson 3377 & H.N. Andrews* (NY). FRANKLIN CO.: Clear Springs Campground WSW of Meadeville, 3.vi.1976, on *Carya*, *R.C. Harris 11520* (NY). HINDS CO.: 3 mi N of Terry, 11.vi.1939, on bark, *G.T. Johnson 2378 & H.N. Andrews* (NY). HOLMES CO.: 7 mi NW of Lexington, 10.vi.1939, on bark, *G.T. Johnson 2266* (NY). JASPER CO.: Bienville National Forest, along CR506 at Little Tallahala Creek, 30.ix.1992, on *Fagus*, *R.C. Harris 28825* (NY). JEFFERSON CO.: MS20 6 mi E of Fayette, 5.iv.1953, on bark, *G.T. Johnson 1224* (NY). ITAWAMBA CO.: Donivan Slough, 28.ix.1992, on *Fagus*, *R.C. Harris 28614* (NY). LAMAR CO.: 17 mi W of Hattiesburg, 7.iv.1953, on *Acer*, *G.T. Johnson 1180[B]* (NY). LAUDERDALE CO.: 1 mi SE of Collinsville, 9.iv.1953, on bark, *G.T. Johnson 1094* (NY). LEE CO.: near Tupelo, 31.xii.1952, on bark, *G.T. Johnson 1046A* (NY). MARION CO.: 5 mi NE of Columbia, 17.vi.1939, on bark, *G.T. Johnson 2775 & H.N. Andrews* (NY). NOXUBEE CO.: 1 mi S of Shugualak, 19.vi.1939, on bark, *G.T. Johnson 3009 & H.N. Andrews* (NY). PEARL RIVER CO.: 10 mi E of Poplarville, 14.vi.1939, on bark, *G.T. Johnson 1107 & H.N. Andrews* (NY). PERRY CO.: 2 mi E of Mahned, 7.iv.1953, on bark, *G.T. Johnson 1139* (NY). PIKE CO.: along Bogue Chito River, 11 mi SE of McComb, 7.iv.1953, on bark, *G.T. Johnson 1171* (NY). SCOTT CO.: Bienville National Forest, Bienville Pines Scenic Area, 29.ix.1992, on *Carya*, *R.C. Harris 28703* (NY). SHARKEY CO.: Delta National Forest, along Rd. #706, 6 mi N of Holly Bluff, 27.xii.1978, on bark, *G.T. Johnson s.n.* (NY). WARREN CO.: 12 mi N of Port Gibson, 5.iv.1953, on bark, *G.T. Johnson 1239* (NY). WAYNE CO.: 12 mi NW of Waynesboro, 8.iv.1953, on bark, *G.T. Johnson 1163* (NY). WILKINSON CO.: Clark Creek Natural Area, 5.iv.1982, on bark, *J. Pruski 2559* (NY). YALOBUSHA CO.: 1 mi S of Oakland, 21.vi.1939, on bark, *G.T. Johnson 2958 & H.N. Andrews* (NY). **NORTH CAROLINA.** BRUNSWICK CO.: Bald

Head Island, Bald Head Island Research Reserve, 21.xi.2013, on *Carpinus*, J.C. Lendemer 39897 & J.W. Barton (NY). CAMDEN CO.: North River Game Land, N of Indian Island Rd./Sassafras Lane, 15.iv.2012, on *Carpinus*, J.C. Lendemer et al. 31255 (NY). CARTERET CO.: Croatan National Forest, 3 mi S of NC101 and North Harlow, 6.iii.2013, on *Acer*, J.C. Lendemer et al. 35399 (NY). COLUMBUS CO.: Columbus County Game Land, Slap Swamp, 18.ix.2013, on *Acer*, J.C. Lendemer et al. 39391 (NY). CRAVEN CO.: Croatan National Forest, Still Gut 0–0.5 mi SW of FS3046/Hope Rd., 6.iii.2013, on *Acer*, L. Gibbons et al. 169 (NY). DARE CO.: Cape Hatteras National Seashore, trail from World War II memorial, 24.iii.2014, on *Myrica*, J.C. Lendemer et al. 43184 (NY). FRANKLIN CO.: 2 mi W of Bunn, 21.viii.1966, on bark, G.T. Johnson s.n. (NY). GASTON CO.: Tryon, 25.ii.1899, on bark, H.A. Green s.n. = *Lich. Bor.-Amer.* 254 (NY). GATES CO.: Great Dismal Swamp National Wildlife Refuge, W side of Sherrill Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30983 (NY). GRAHAM CO.: Nantahala National Forest, Slickrock Wilderness Area, trail to Slickrock Creek along Lake Caulderwood, 3.x.1987, on *Cornus*, R.C. Harris 20925 (NY). HENDERSON CO.: Pisgah National Forest, North Mills River Recreation Area, 30.iv.2006, on *Acer*, J.C. Lendemer et al. 7108 (NY). JONES CO.: Croatan National Forest, FS134/Holston Hunter Rd. at Holston Creek, 5.iii.2013, on *Acer*, L. Gibbons et al. 91 (NY). MACON CO.: Nantahala National Forest, along Buck Creek Rd./CR1535, 5.x.1997, on *Carpinus*, R.C. Harris 41338 (NY). NASH CO.: along Tar River, 3 mi SW of Spring Hope, 21.viii.1966, on bark, G.T. Johnson s.n. (NY). ONSLOW CO.: Hammocks Beach State Park, NE end of Huggins Island, 25.x.2013, on *Celtis*, J.C. Lendemer et al. 38653 (NY). PASQUOTANK CO.: Great Dismal Swamp National Wildlife Refuge, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 31041 (NY). PENDER CO.: Holly Shelter Game Land, Trumpeter Swamp N of Blossom Creek, 27.x.2013, on *Acer*, J.C. Lendemer et al. 39045 (NY). SWAIN CO.: Great Smoky Mountains National Park, Sunkota Ridge Trail between Martins Gap and S spur trail to Indian Creek Trail, 21.vi.2011, on *Liriodendron*, J.C. Lendemer 29397 & N. Davoodian (NY). TRANSYLVANIA CO.: Gorges State Park, E facing drainage of the Toxaway River, ~0.5 km E of Indian Camp Rd., 10.viii.2005, on *Acer*, J.C. Lendemer 4534 & E. Tripp (NY). TYRRELL CO.: Pocosin Lakes National Wildlife Refuge, 0–0.4 mi N of Bodwell Rd., 23.iii.2013, on *Acer*, J.C. Lendemer et al. 36580 (NY). **OKLAHOMA.** McCURTAIN CO.: Beaver's Bend State Park, 9.viii.1965, on bark, G.T. Johnson 6297[A] (NY). **SOUTH CAROLINA.** AIKEN CO.: Savannah River Bluffs Heritage Preserve, 13.iii.2010, on bark, W.R. Buck 56116 (NY). BERKELEY CO.: Francis Marion National Forest, along FSR110/Walleye Rd., E of Walleye Bay, 5.xii.2013, on *Carya*, R.C. Harris 59950 (NY). CHARLESTON CO.: Francis Marion National Forest, E shores of Wambaw Creek floodplain, E of boundary of Wambaw Creek Wilderness, 2.xii.2013, on *Carpinus*, J.C. Lendemer et al. 40596 (NY). COLLETON CO.: Donnelley Wildlife Management Area, Lodge Rd. 0.2 mi N of Lodge, 18.xii.2013, on fallen *Ilex*, J.C. Lendemer et al. 41773 (NY). CLARENDON CO.: 2 mi W of Turbeville, 29.i.1967, on bark, G.T. Johnson s.n. (NY). DARLINGTON CO.: Oaklyn Plantation, 10.v.2008, on *Celtis*, G.B. Perlmutter et al. 1484 (NY). FLORENCE CO.: Pee Dee River Basin, Back Swamp, 10.v.2008, on *Ilex*, G.B. Perlmutter et al. 1588 (NY). MARION CO.: 8 mi SE of Gresham, 29.i.1967, on bark, G.T. Johnson s.n. (NY). PICKENS CO.: along Eastatoe Creek ~2.5 mi SW of Rocky Botton, 27.ix.1989, on *Carya*, R.C. Harris 24753 (NY). SUMTER CO.: near Statesburg, 28.i.1967, on bark, G.T. Johnson s.n. (NY). **TENNESSEE.** ANDERSON CO.: 5 mi NW of Oliver Springs, 4.ix.1960, on *Acer*, G.T. Johnson s.n. (NY). BLOUNT CO.: Great Smoky Mountains National Park, ~2 mi NE of Happy Valley, 30.vi.2010, on *Acer*, R.C. Harris 56390 (NY). POLK CO.: Cherokee National Forest, along FSR62 at Sheeds Creek, 5.x.1998, on *Carpinus*, R.C. Harris 42507 (NY). WHITE CO.: 5 mi E of Sparta, 10.ix.1960, on bark, G.T. Johnson 6030 (NY). **TEXAS.** CHEROKEE CO.: along Neches River, 8 mi SW of Alto, 19.vii.1965, on bark, G.T. Johnson 6300[A] (NY). GONZALES CO.: 2 mi S of Thompsonville, 12.vii.1966, on bark, G.T. Johnson s.n. (NY). HARRIS CO.: 2 mi E of Humble, 11.vii.1965, on bark, G.T. Johnson s.n. (NY). HOUSTON CO.: along White Rock Creek, 10 mi SE of Crockett, 10.vii.1965, on bark, G.T. Johnson s.n. (NY). LIBERTY CO.: near Rye, 11.vii.1965, on bark, G.T. Johnson s.n. (NY). POLK CO.: Big Thicket National Preserve, Big Sandy Creek Unit, 30.x.1976, on bark, R.S. Egan 9367 (NY). TYLER CO.: Big Thicket National Preserve, Beech Creek Unit, 1.iv.1978, on bark, R.S. Egan 11279 (NY). WAKLER CO.: 4 mi E of Huntsville, 10.vii.1965, on bark, G.T. Johnson s.n. (NY). **VIRGINIA.** SUFFOLK CITY: Dismal Swamp National Wildlife Refuge, Railroad Ditch $\frac{3}{4}$ mi E of entrance on Desert Rd., 12.xii.2009, on *Acer*, J.C. Lendemer 20394 & B.P. Hodkinson (NY).

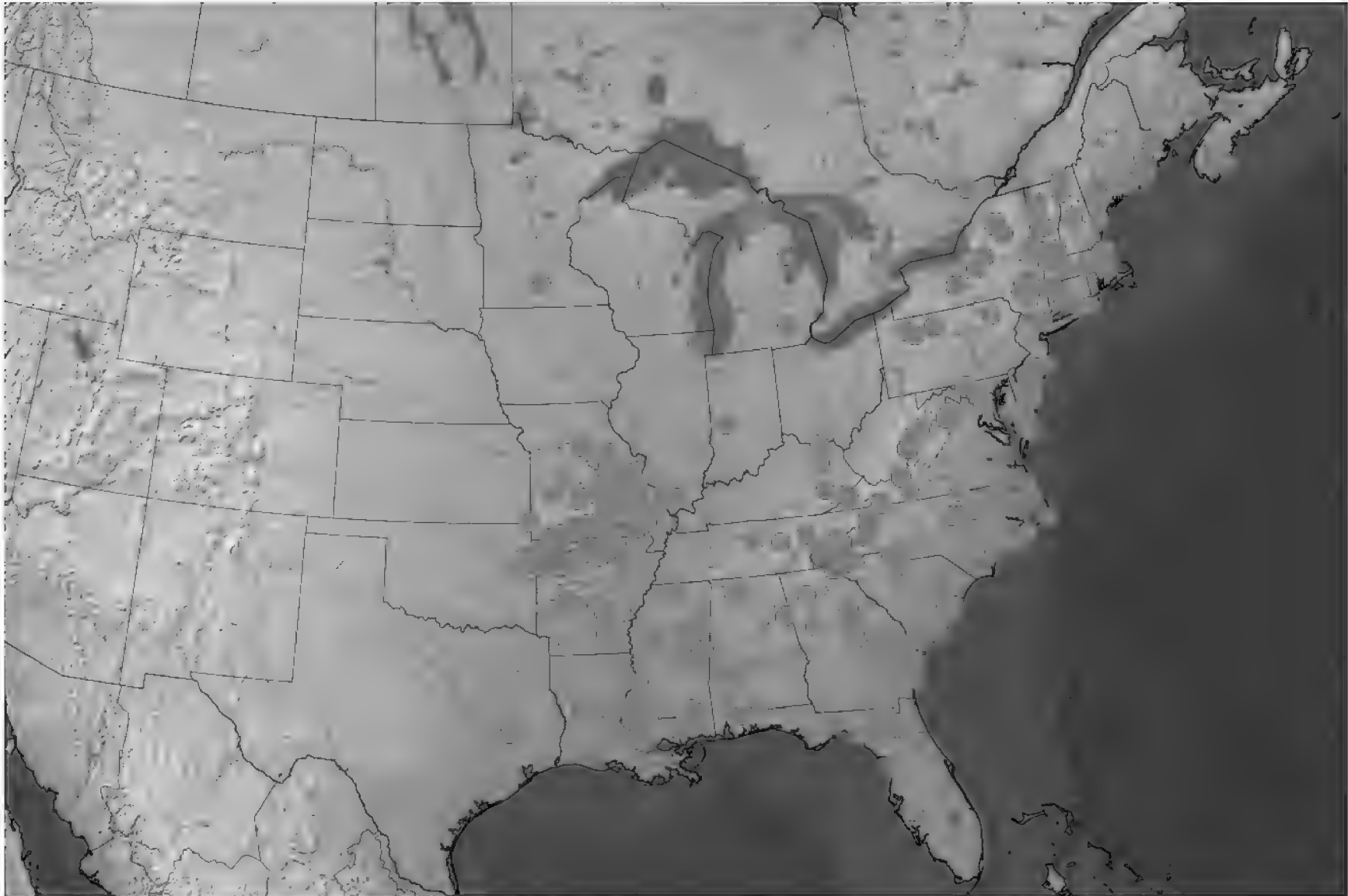


Figure 11. Geographic distribution of *Pyrenula pseudobufonia* in eastern North America based on specimens examined for this study.

NOTE IX – *PYRENULA SHIRABEICOLA* IS NOT CONSPECIFIC WITH *P. PSEUDOBUFONIA*

Pyrenula shirabeicola Kurok. & S. Nakan, Mem. Natn. Sci. Mus., Tokyo, 4: 67. 1971. **TYPE: JAPAN. HONSHU.** PROV. HIDA: Mt. Ontake, 1900–2000 m., 13.viii.1964, on trunk of *Abies veitchii*, S. Kurokawa 64172 = *Lich. Rar. Crit. Exs. No. 188* (TNS!, holotype; NY!, isotype).

Discussion. – When NY recently received material of the type collection of *Pyrenula shirabeicola*, we examined the disposition of this name as part of routine curation of the specimen. Aptroot (2012) proposed *P. shirabeicola* as a synonym of *P. pseudobufonia* (Rehm) R.C. Harris, the latter being a common species in eastern North America (Figure 11). The ascospores of *P. pseudobufonia* are distinctive in having the terminal locules appressed to the spore wall (Figure 12D). Those in the isotype and holotype of *P. shirabeicola* are not of this type however (Figure 12C). Additionally, while both *P. shirabeicola* and *P. pseudobufonia* are UV+ bright yellow due to the presence of lichexanthone, the hymenium in *P. shirabeicola* is I- and is not inspersed while that of *P. pseudobufonia* is I+ bluish and densely inspersed with oil. Given the morphological differences outlined above it seems best to maintain *P. shirabeicola* described by Kurokawa and Nakanishi (1971) from Japan, as distinct from *P. pseudobufonia*.

Selected comparative material of Pyrenula pseudobufonia examined. – **CANADA. NEW BRUNSWICK.** ALBERT CO.: Fundy National Park, East Branch Trail, 25.ix.2013, on *Fagus*, R.C. Harris 58939 (NY). CHARLOTTE CO.: Grans Falls Flowage on Sat. Croix River, 30.iv.2011, on *Fagus*, J.C. Lendemer 27841 (NY). **NOVA SCOTIA.** COLCHESTER CO.: Economy River Wilderness Area, Kenomee Canyon Trail, 14.v.2004, on *Acer*, R.C. Harris 49743 (NY). **QUEENS CO.:** Thomas H. Raddall Provincial Park, Moody Barrens, 7.v.1999, on *Quercus*, R.C. Harris 42877 (NY). **SHELBURNE CO.:** along Hwy. 302 just S of Upper Ohio, 9.v.1999, on *Acer*, R.C. Harris 43060 (NY). **ONTARIO:** Ottawa, 9.ix.1891, on *Fagus*, J. Macoun 536 (NY). **BRUCE CO.:** Fathom Five National Marine Park, Flowerpot Island, 22.ix.2008, on *Acer*, J.C. Lendemer 14485 (NY). **PEEL CO.:** N of Palgrave, 17.ix.1946, on *Fagus*, R.F. Cain 26694 (NY). **U.S.A. ALABAMA.** CLEBURNE CO.: 2 miles NE of Heflin, 32.x.1964, G.T. Joh-

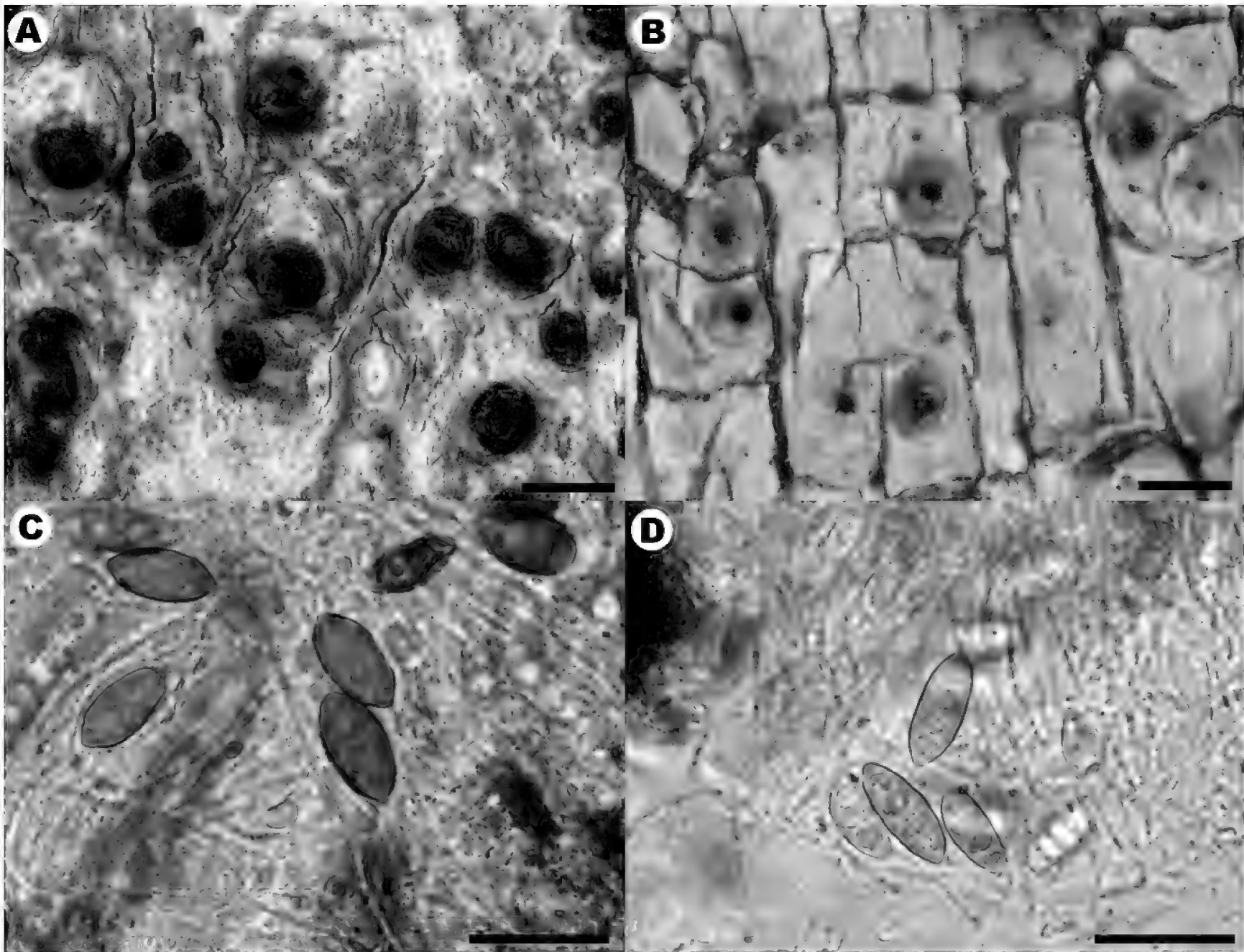


Figure 12. Comparison between *Pyrenula shirabeicola* (B and D, both from isotype at NY) and *P. pseudobufonia* (A from Harris 38541 and C from Harris 38604). A, gross morphology of thallus and perithecia of *P. pseudobufonia*. B, ascospores of *P. pseudobufonia*. C, gross morphology of thallus and perithecia of *P. shirabeicola*. D, ascospores of *P. shirabeicola*. Scales = 1.0 mm in A and B, 20 μ m in C and D.

-nson s.n. (NY). ESCAMBIA CO.: Conecuh National Forest, US29 just E of McGowan Bridge, 13.iv.2007, on *Quercus*, J.C. Lendemer et al. 9366 (NY). LEE CO.: Auburn, 18.iii.1897, on *Quercus*, F.S. Earle & C.F. Baker s.n. (NY). MARENGO CO.: along Sweetwater Creek, 1 mi SE of Sweetwater, 20.x.1964, G.T. Johnson s.n. (NY). MORGAN CO.: SW Decatur, near San Souci Cave entrance, 21.viii.2012, on *Quercus*, E. Tripp 3759 & L. Tripp (NY). TUSCALOOSA CO.: near Rickey, 24.x.1964, G.T. Johnson s.n. (NY). **ARKANSAS.** BAXTER CO.: Ozark National Forest, Leatherwood Wilderness, W of AR341, 18.iv.2005, on *Quercus*, R.C. Harris 51198 (NY). BENTON CO.: Hobbs State Park-Conservation Area, along Page Sawmill Rd., 17.iv.2004, on *Quercus*, R.C. Harris 49416 (NY). BRADLEY CO.: along Saline River, 4 mi N of Warren, 19.x.1964, G.T. Johnson s.n. (NY). CARROLL CO.: 10 mi W of Eureka Springs, 24.iv.1954, on *Quercus* (NY). CRAWFORD CO.: Ozark National Forest, along small stream just upstream from Cold Springs Lake, 15.iv.2004, on *Acer*, R.C. Harris 49136 (NY). FRANKLIN CO.: Ozark National Forest, Boston Mountain Ranger District, Shore Lake, 17.x.2005, on *Quercus*, R.C. Harris 51766 (NY). GARLAND CO.: Ouachita National Forest, W side of North Fork of Ouachita River, ~0.1 mi S of AR298, 6.x.2010, on *Quercus*, J.C. Lendemer et al. 26166 (NY). IZARD CO.: NE corner of Devil's Knob-Devil's Backbone Natural Area, 24.x.2001, on *Quercus*, R.C. Harris 45326 (NY). JEFFERSON CO.: Pine Bluff Arsenal, 2.xii.1999, on *Quercus* branch, D. Ladd 22012 & M. Pederson (NY). LAWRENCE CO.: Shirey Bay-Rainey Brake Wildlife Management Area, 29.iii.2006, on *Quercus*, W.R. Buck 50035 (NY). MADISON CO.: Madison County Wildlife Management Area, 2.xi.2000, on *Quercus*, R.C. Harris 44655 (NY). MONTGOMERY CO.: along Little Missouri River, 4 mi N of Camp Albert, 19.iv.1956, G.T. Johnson s.n. (NY). NEWTON CO.: Ozark National Forest, Boston Mountains, Alum Cove Recreation Area, 24.iv.1988, W.R. Buck 15804 (NY). PIKE CO.: along Cassat River, 16 mi SE of Athens,

19.iv.1955, on *Quercus*, *G.T. Johnson s.n.* (NY). POPE CO.: Ozark National Forest, Kings Bluff, 7.xi.2002, on *Quercus*, *W.R. Buck 43070* (NY). SEARCY CO.: Buffalo National River, Tyler Bend, 17.iv.2005, on *Quercus*, *R.C. Harris 40986* (NY). SHARP CO.: Harold E. Alexander Wildlife Management Area, 25.x.2001, on *Quercus*, *R.C. Harris 45609A* (NY). STONE CO.: Hell Creek Natural Area, 8.x.2010, on *Quercus*, *J.C. Lendemer 26419 & D. Ladd* (NY). **CONNECTICUT.** LITCHFIELD CO.: Great Mountain Forest, Sam Yankee Woodlot, 20.ix.2003, on *Quercus*, *W.R. Buck 45000* (NY). NEW HAVEN CO.: West Rock, New Haven, 23.v.1914, on *Quercus*, *W.C. Barbour 30* (NY). **DELAWARE.** SUSSEX CO.: Cape Henlopen State Park, 27.iv.2012, on *Acer*, *J.C. Lendemer 32054 & B.P. Hodgkinson* (NY). **FLORIDA.** BRADFORD CO.: along CR235, 2.7 mi SW of FL100, 3.xii.1994, on *R.C. Harris 35927* (NY). CITRUS CO.: St. Martins Marsh Aquatic Preserve along CR44, 5.xii.1996, on *Quercus*, *R.C. Harris 39775* (NY). CLAY CO.: Gold Head Branch State Park, 28.xi.1992, on *Quercus*, *R.C. Harris 29168* (NY). COLUMBIA CO.: Osceola National Forest, W of FSR237, 15.xii.1993, on *Quercus*, *R.C. Harris 32551-A* (NY). ESCAMBIA CO.: along CR99A at Brushy Creek, 8.xii.1993, on *Quercus*, *R.C. Harris 31889A* (NY). GILCHRIST CO.: Waccasassa Flats, 5.xii.1993, on *Quercus*, *R.C. Harris 31725* (NY). MANATEE CO.: Upper Myakka River Watershed, on Taylor Rd. at Myakka River, 29.iii.1998, on *Quercus*, *R.C. Harris 42043* (NY). PUTNAM CO.: Crescent City, *G.W. Martin 37* (NY). SUWANNEE CO.: Little River Sink, N of 200th St., 5.xii.1994, on *Quercus*, *R.C. Harris 36049* (NY). UNION CO.: Worthington Springs, 4.xii.1994, on *Quercus*, *R.C. Harris 35981* (NY). WAKULLA CO.: Apalachicola National Forest, CR368, 3.6 mi NW of jct w/ US319, 31.xii.1990, on *Quercus*, *R.C. Harris 26179* (NY). WALTON CO.: on N side of US90 ~1 mi W of jct w/ FL285, 30.xi.1988, on *Quercus*, *R.C. Harris 23118* (NY). **GEORGIA.** BRYAN CO.: Richmond Hill Wildlife Management Area, 4.ii.2012, on *Quercus*, *M.F. Hodges 7951* (NY). CANDLER CO.: Fifteenmile Creek Preserve, 22.xii.2009, on *Quercus*, *J.C. Lendemer et al. 21687* (NY). CLINCH CO.: Score Bridge Road swamp, 11.xii.2011, on *Quercus*, *M.F. Hodges 7848* (NY). COWETA CO.: 3 mi NW of Digbey, 22.x.1964, *G.T. Johnson s.n.* (NY). EFFINGHAM CO.: Craig Barrow farm, 3.iii.2012, on *Quercus*, *M.F. Hodges 8203* (NY). EMANUEL CO.: Ohoopee Dunes Natural Area, McLeod Bridge tract, 19.xii.2009, on *Quercus*, *J.C. Lendemer 21329 & S.Q. Beeching* (NY). GLYNN CO.: E of Brunswick, St. Simons Island, 30.xii.1976, *R.S. Egan 9673* (NY). GREENE CO.: Oconee National Forest, end of FSR1202, 19.ix.1996, on *Quercus*, *W.R. Buck 30620* (NY). LONG CO.: Griffin Ridge Wildlife Management Area, 5.ii.2012, on *Quercus*, *M.F. Hodges 8140* (NY). PUTNAM CO.: 6 mi SW of Eatonton, 4.ii.1967, *G.T. Johnson s.n.* (NY). RABUN CO.: Chattahoochee National Forest, Rabun Bald, 4.x.1997, on *Acer*, *R.C. Harris 41252* (NY). TOWNS CO.: Chattahoochee National Forest, Hightower Gap to Rich Knob, 11.xi.2007, on *Acer*, *J.C. Lendemer et al. 10887* (NY). TREUTLEN CO.: Berry Hill Bluff, along Dead River, 18.iii.1995, *W.R. Buck 27609* (NY). WILKINSON CO.: along US441, 2.2 mi S of Commissioner Creek, 19.ix.1996, on *Quercus*, *R.C. Harris 38854* (NY). **ILLINOIS.** COOK CO.: Glencoe, 11.xi.1905, on *Acer*, *W.W. Calkins 236* (NY). UNION CO.: Shawnee National Forest, Panther Den, 17.x.1993, on *Acer*, *R.C. Harris 31438* (NY). **INDIANA.** PUTNAM CO.: Fern, 1893, *L.M. Underwood 3* (NY). **KANSAS.** CHEROKEE CO.: 4 mi E of Baxter Springs, 24.iv.1954, on *Quercus*, *C.L. Kramer 379* (NY). **KENTUCKY.** BATH CO.: Daniel Boone National Forest, Stoney Cove Recreation Area, 10.x.1995, on *Fagus*, *R.C. Harris 36920* (NY). LECTHER CO.: adjacent to upper section of Bad Branch Nature Preserve, 14.ix.1991, on *Quercus*, *R.C. Harris 27104* (NY). PERRY CO.: Daniel Boone National Forest, Old Field Branch of Leatherwood Creek, 6.x.2001, on *Fagus*, *R.C. Harris 44948* (NY). **LOUISIANA.** ASCENSION PARISH: along Bayou Manchac, 30.vi.1964, *G.T. Johnson 5724* (NY). EAST BATON ROUGE PARISH: Burden Plantation, Essen Lane, 5.i.1982, *S.C. Tucker 21948* (NY). EAST FELICIANA PARISH: Idlewild Experimental Station, 16.iii.1979, on hardwood, *S.C. Tucker 18483* (NY). NATCHITOCHES PARISH: Longleaf Trail Vista, 28.v.1976, on *Quercus*, *R.C. Harris 11453* (NY). **MAINE.** HANCOCK CO.: Lead Mountain, on *Fagus*, *W.R. Buck 52266* (NY). KNOX CO.: Camden Hills State Park, 29.v.2009, on *Quercus*, *R.C. Harris 55565* (NY). OXFORD CO.: Canton Point, 4.v.1934, on *Fagus*, *J.C. Parlin 11980* (NY). WALDO CO.: Ducktrap River Preserve, ~4 mi NE of Lincolnville Center, 28.v.2009, on *Quercus*, *W.R. Buck 54861* (NY). YORK CO.: Massabesic Experimental Forest, South Unit, 6.vi.2010, on *Quercus*, *J.C. Lendemer 22572* (NY). **MARYLAND.** BALTIMORE CO.: path to Fox Run, 20.xi.1906, on *Quercus*, *C.C. Plitt 70A* (NY). DORCHESTER CO.: Horns Point, NW of Cambridge, 24.iii.1962, on bark, *C.F. Reed 54618* (NY). FREDERICK CO.: Mt. Catoctin Park, Cunningham Falls, 10.vi.1977, on bark, *E.G. Worthley s.n.* (NY). WASHINGTON CO.: Pleasant Valley Rd. at Rt. 77, Catoctin Mts., 28.iv.1962, on bark, *C.F. Reed 55598* (NY). WICOMICO CO.: Nassawango Creek TNC Preserve, Wicomico-2 Tract, 16.x.2013, on *Quercus*, *J.W. Barton et al. 163* (NY). WORCESTER CO.: Pocomoke State Forest, Corker Creek 0.35 mi SE of US113 bridge, 15.xi.2012, on *Acer*, *J.C. Lendemer et*

al. 33950 (NY). **MASSACHUSETTS.** BERKSHIRE CO.: Mt. Greylock State Reservation, W slope of Mt. Fitch, 8.v.1995, *W.R. Buck* 27770 (NY). ESSEX CO.: Manchester, 6.iv.1887, *W.G. Farlow s.n.* (NY). FRANKLIN CO.: Sunderland, 22.ii.1918, on *Quercus*, *H.B. Peirson s.n.* (NY). MIDDLESEX CO.: Cambridge, *E. Tuckerman s.n.* (NY). PLYMOUTH CO.: Halifax, iv.1898, *C.A. King s.n.* (NY). WORCESTER CO.: Worcester, 1887, *G.E. Stone s.n.* (NY). **MICHIGAN.** CHEBOYGAN CO.: S of Riggsville Rd., W or UMBS entrance, 23.vii.1974, on *Quercus*, *W.R. Buck s.n.* (NY). EMMET CO.: Readmond Park near Good Hart, 8.vii.1969, on *Quercus*, *M. Gaudreau s.n.* (NY). IOSCO CO.: Iargo Springs, 19.ix.1965, on *Quercus*, *R.C. Harris* 834 (NY). WASHTENAW CO.: W of Embury Rd., SE of South Lake, 2.ii.1975, on *Fagus*, *W.R. Buck s.n.* (NY). **MINNESOTA.** BLUE EARTH CO.: Mankato, 1.vii.1899, on bark, *J.R. Gardner* 100 (NY). **MISSISSIPPI.** ADAMS CO.: 15 mi S of Natchez, 6.iv.1953, *G.T. Johnson* 1214 (NY). AMITE CO.: along MI24, 3 mi W of Liberty, 6.iv.1953, *G.T. Johnson* 11974 (NY). FOREST CO.: 13 mi SE of Hattiesburg, 7.iv.1953, *G.T. Johnson* 1126A (NY). FRANKLIN CO.: Clear Springs Campground, WSW of Meadeville, 3.vi.1976, *R.C. Harris* 11544 (NY). GEORGE CO.: Wyatt Hills, 18.viii.1954, on *Fagus*, *D. Demaree* 35786 (NY). HOLMES CO.: 10 mi N of Tchula, 10.vi.1939, *G.T. Johnson* 2258 (NY). JEFFERSON CO.: MI20 6 mi E of Fayette, 5.iv.1953, *G.T. Johnson* 1226 (NY). LAUDERDALE CO.: 1 mi SE of Collinsville, 9.ix.1953, *G.T. Johnson* 1095A (NY). LEE CO.: near Tupelo, 31.xii.1952, *G.T. Johnson* 1046 (NY). LOWNDES CO.: along US45, 11 mi N of Columbus, 31.xii.1952, *G.T. Johnson* 1051 (NY). MONTGOMERY CO.: 1 mi E of Stewart, 2.i.1953, *G.T. Johnson* 1014 (NY). NESHOMA CO.: 10 mi W of Philadelphia, 9.iv.1953, *G.T. Johnson* 1114 (NY). NOXUBEE CO.: 1 mi S of Shugualak, 19.iv.1939, *G.T. Johnson* 3009 (NY). OKTIBBEHA CO.: along US82, 6 mi W of Starkville, 2.i.1953, *G.T. Johnson* 1008 (NY). MARSHALL CO.: 8 mi S of Holly Springs, 30.xii.1952, *G.T. Johnson* 1001 (NY). PEARL RIVER CO.: 1 mi N of Carriere, 14.vi.1939, *G.T. Johnson* 1121 & *H.N. Andrews* (NY). PIKE CO.: 7 mi SE of McComb, 7.iv.1953, *G.T. Johnson* 1191A (NY). SHARKEY CO.: Delta National Forest, FSR707 9 mi NE of Valley Park, vii.1978, *G.T. Johnson s.n.* (NY). STONE CO.: near Perkinston, xii.1938, *G.T. Johnson* 3346 (NY). WARREN CO.: 12 mi N of Port Gibson, 5.iv.1953, *G.T. Johnson* 1246 (NY). WEBSTER CO.: 2 mi W of Mathisen, 2.i.1953, *G.T. Johnson* 1010 (NY). WILKINSON CO.: 2 mi W of Centreville, 6.iv.1953, *G.T. Johnson* 1208 (NY). **MISSOURI.** BARRY CO.: Mark Twain National Forest, Piney Creek Wilderness, 27.iii.2006, on *Quercus*, *R.C. Harris* 52193 (NY). BENTON CO.: Brickley Hollow Access, N of small unnamed road 0.1 mi W of Lake Rd. H-25, 15.iv.2005, on *Quercus*, *R.C. Harris* 50859 (NY). BOLLINGER CO.: Castor River Conservation Area, along CR702, 22.x.2001, on *Quercus*, *W.R. Buck* 40107 (NY). BUTLER CO.: Mark Twain National Forest, Mud Creek Natural Area, S of FSR3101/CR517, 16.x.2003, on bark, *C. Gueidan* 1049 (NY). CARTER CO.: Mark Twain National Forest, vicinity of Big Barren Creek Natural Area, 9.x.2010, on *Acer*, *J.C. Lendemer* 26601-A & *D. Ladd* (NY). CHRISTIAN CO.: Mark Twain National Forest, S of Chadwick Rd. at jct of Monarch Rd., 21.v.2003, *R.C. Harris* 47628 (NY). CRAWFORD CO.: Blue Springs Creek Conservation Area, N of CR-N, 28.x.2000, on *Acer*, *R.C. Harris* 44123 (NY). DENT CO.: Indian Trail Conservation Area, W of MNR Rd. 1019, 3.xi.2004, on *Quercus*, *R.C. Harris* 50157 (NY). DOUGLAS CO.: Mark Twain National Forest, Dimcher Hollow, 18.iv.1997, *W.R. Buck* 32068 (NY). FRANKLIN CO.: Little Indian Creek Conservation Area, S of Little Indian Creek Rd., 18.v.2003, on *Quercus*, *W.R. Buck* 44312 (NY). GASCONADE CO.: Canaan Conservation Area, vicinity of parking area at end of Bock Rd./CR434, 25.iii.2006, on *Quercus*, *J.C. Lendemer et al.* 6060 (NY). HOWARD CO.: Hungry Mother Conservation Area, along CR127, 14.iv.2005, on *Quercus*, *R.C. Harris* 50692 (NY). HOWELL CO.: White Ranch Conservation Area, N of MO142 at terminus of trail 11, 10.vi.2000, *W.R. Buck* 37500 (NY). JEFFERSON CO.: Valley View Glades Natural Area, N of MO-B, 18.x.200, on bark, *C. Gueidan* 1022 (NY). LACLEDE CO.: Bear Creek Conservation Area, E of Rustic Drive, 4.xi.2002, on *Quercus*, *R.C. Harris* 46631A (NY). MARIES CO.: Spring Creek Gap Conservation Area, E of CR340/Old Hwy. 63, 4.xi.2002, on *Quercus*, *R.C. Harris* 46552 (NY). MONTGOMERY CO.: NW corner of Danville Conservation Area, Danville Glades Natural Area, 27.x.2001, on *Quercus*, *R.C. Harris* 45727 (NY). OREGON CO.: Mark Twain National Forest, McCormack Lake Recreation Area, 26.iv.1988, *W.R. Buck* 15900 (NY). OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on *Quercus*, *R.C. Harris* 47419 (NY). REYNOLDS CO.: Johnson Shut-Ins State Park, along East Fork Black River E of CR-N, 9.x.1997, on *Quercus*, *R.C. Harris* 41357 (NY). RIPLEY CO.: Mudpuppy Conservation Area, 0–1 mi NW of MO-BB, 17.x.2003, on bark, *C. Gueidan* 920 (NY). SAINT FRANCOIS CO.: St. Francois State Park, Coonville Creek Wild Area, Mooner's Hollow Trail, 19.iv.1997, on *Quercus*, *W.R. Buck* 32093 (NY). SHANNON CO.: MOFEP site 2, Carrs Creek State Forest, 12.iii.1996, on *Quercus*, *D. Ladd* 19611 (NY). STONE CO.: Ashe Juniper Natural Area, 15.x.2005, on

Acer, R.C. Harris 51676 (NY). TANEY CO.: Boston Ferry Conservation Area, E of CR 65-70B/Shary View Rd., 5.xi.2002, on *Quercus*, R.C. Harris 46769 (NY). TEXAS CO.: Gist Ranch Conservation Area, N of Ranch Rd., 4.xi.2004, on *Quercus*, R.C. Harris 50281 (NY). WASHINGTON CO.: Hughes Mountain Conservation Area, E of CR540, 3.xi.2002, *A. Amtoft* 334B (NY). WAYNE CO.: Sam A. Baker State Park, Shut-Ins Trail, 15.x.2003, on dead *Quercus*, W.R. Buck 45361 (NY). **NEW HAMPSHIRE**. GRAFTON CO.: Plymouth, viii.1893, on *Fagus*, C.E. Cummings s.n. = *Dec. N. Amer. Lich.* 150 (NY). **NEW JERSEY**. BERGEN CO.: Closter, 1876, C.F. Austin 714 (NY). BURLINGTON CO.: Wharton State Forest, Washington, 1.vii.2003, on *Quercus*, J.C. Lendemer et al. 999 (NY). CAPE MAY CO.: Belleplain State Forest, ~1.25 mi W of jct of NJ550[spur] and Cedar Bridge Rd., 3.ii.2009, on *Quercus*, J.C. Lendemer 15283 (NY). CUMBERLAND CO.: Bear Swamp West, 0.2 mi E of NS trail at point ~0.4 mi SE of Ackley Rd./CR718, 17.ii.2012, on large *Fagus*, B.P. Hodgkinson et al. 18055 (NY). GLOUCESTER CO.: Newfield, iv.1888, on *Quercus*, J.B. Ellis s.n. (NY). OCEAN CO.: Manahawkin Wildlife Management Area, S of Stafford Ave., 2.xii.2009, on *Quercus*, J.C. Lendemer 20073 (NY). PASSAIC CO.: Skylands, 4.vii.1917, on *Quercus*, N.L. Britton 14 (NY). **NEW YORK**. GREENE CO.: Catskill Park, Blackhead Range Trail, 13.v.1996, on *Fagus*, R.C. Harris 38604 (NY). HAMILTON CO.: Long Point, Raquette Lake, 6.ix.1986, on *Fagus*, R.C. Harris 19351 (NY). ONEIDA CO.: Taberg, v.1887, L.M. Underwood s.n. (NY). ST. LAWRENCE CO.: Cranberry Lake Campground, along trail to Bear Mountain, 22.ix.1983, on *Fagus*, W.R. Buck 9645 (NY). ONONDAGA CO.: Jamesville, x.1887, O.F. Cusick s.n. (NY). SUFFOLK CO.: Greenport, 3.v.1915, on *Fagus*, R. Latham s.n. (NY). ULSTER CO.: trail to Giant Ledge from Giant Ledge parking lot on CR47, 10.v.1993, on *Fagus*, R.C. Harris 30498 (NY). WASHINGTON CO.: Fort Edward, 1867, E.C. Howe s.n. (NY). YATES CO.: Penn Yan, H.P. Sartwell s.n. (NY). **NORTH CAROLINA**. CAMDEN CO.: Dismal Swamp State Park, Western Boundary Ditch, S of int w/ Corapeake Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30910 (NY). CARTERET CO.: Croatan National Forest, 3 mi S of NC101 and North Harlow, 6.iii.2013, on *Acer*, J.C. Lendemer et al. 35402 (NY). COLUMBUS CO.: Lake Waccamaw State Park, Sand Ridge Nature Trail, 18.xi.2013, on *Quercus*, J.C. Lendemer et al. 39217 (NY). CURRITUCK CO.: North River Game Land, W of Maple Rd. 0.5 mi N of int w/ US158, 12.iv.2012, on *Carpinus*, J.C. Lendemer et al. 30694 (NY). DARE CO.: Alligator River National Wildlife Refuge, SE of jct of Butler Rd. and Sandy Ridge Rd., 21.iii.2014, on *Acer*, J.C. Lendemer et al. 42920 (NY). GATES CO.: Merchants Millpond State Park, oxbow of Bennett's Creek, 11.xii.2009, on *Carpinus*, J.C. Lendemer 20362 & F. Williams (NY). GRAHAM CO.: Nantahala National Forest, Joyce Kilmer-Slickrock Wilderness, vicinity of summit of Haeo Mountain, 30.ix.2014, on *Fagus*, J.C. Lendemer 43862 & J. Allen (NY). HERTFORD CO.: Chowan Swamp Game Land, E shore of Parkers Ferry Rd., 11.iv.2012, on *Quercus*, J.C. Lendemer et al. 30519 (NY). HYDE CO.: Alligator River National Wildlife Refuge, Chip Rd. 3.2 mi S of jct w/ Whipping Creek Rd., 24.iii.2014, on *Acer*, J.C. Lendemer et al. 43259 (NY). JACKSON CO.: Cedar Cliff Mountain, along NC281, 15.ix.1996, on *Liriodendron*, R.C. Harris 38639 (NY). JONES CO.: Croatan National Forest, tributary to Hunters Creek, 7.iii.2013, on *Acer*, J.C. Lendemer et al. 35678 (NY). MECKLENBURG CO.: E shore of Lake Wylie, 11.ii.1999, on bark, R.J. Hill 529 (NY). NASH CO.: along Tar River, 3 mi SW of Spring Hope, 2.viii.1966, G.T. Johnson s.n. (NY). ONSLOW CO.: White Oak River Game Land, Quantenary Tract, 28.x.20123, on *Quercus*, J.C. Lendemer et al. 39162 (NY). ORANGE CO.: Mason Farm Biological Reserve, Big Oak Woods, 30.viii.2007, on fallen branch, G.B. Perlmutter 1162 (NY). PASQUOTANK CO.: Great Dismal Swamp National Wildlife Refuge, E side of County Line Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 31016 (NY). PENDER CO.: Holly Shelter Game Land, S portion of Shaken Creek floodplain, 27.x.2013, on *Quercus*, J.C. Lendemer et al. 38879 (NY). SWAIN CO.: Great Smoky Mountains National Park, Mingus Creek Trail, W of US441 ~2 mi S of Tow String, 28.vi.2010, on *Fagus*, W.R. Buck 56290 (NY). TYRRELL CO.: Pocosin Lakes National Wildlife Refuge, Frying Pan Boating Access, 10.xii.2012, on fallen *Acer*, R.C. Harris 58377 (NY). WAKE CO.: William B. Umstead State Park, near E shore of Sycamore Lake, 26.vii.2008, on *Fagus*, G.B. Perlmutter 1614 (NY). YANCEY CO.: Pisgah National Forest, Bald Knob Ridge Trail 186, 2.x.2014, on *Fagus*, J.C. Lendemer 44173 & J. Allen (NY). **OKLAHOMA**. CHEROKEE CO.: J.T. Nickel Family Nature Wildlife Preserve (J5 Ranch), 30.x.2000, on *Acer*, R.C. Harris 44240 (NY). **PENNSYLVANIA**. CAMERON CO.: Elk State Forest, Fourmile Run Rd., 3.25 mi N of jct w/ PA155, 2.ix.2010, on *Carpinus*, J.C. Lendemer 24415 (NY). ELK CO.: Allegheny National Forest, FR131 1.25 mi SW of jct w/ FR228, 9.ix.2010, on *Fagus*, J.C. Lendemer 25142 (NY). POTTER CO.: Elk State Forest, East Cowley Run Rd. 0.25–0.5 mi E of State Park boundary, 2.ix.2010, on *Carpinus*, J.C. Lendemer 24350 (NY). WARREN CO.: Allegheny National Forest, S of S boundary of Hickory Creek Wilderness, 7.ix.2010, on *Carpinus*, J.C. Lendemer 24674 (NY). WYOMING CO.: Bardwell, 29.iii.1902, on bark, W.C. Barbour 1205 (NY).

SOUTH CAROLINA. BEAUFORT CO.: Spring Island, NW side, 0–0.25 mi S of Shrimp Pond Rd., 21.xii.2013, on *Acer*, J.C. Lendemer et al. 42473 (NY). **BERKELEY CO.:** Francis Marion National Forest, S of Santee River, FS152/Cooper Ridge Rd. 0.4 NE of jct w/ FSR152A, 5.xii.2013, on *Quercus*, J.C. Lendemer et al. 41262 (NY). **CHARLESTON CO.:** Edisto Island, Botany Bay Plantation Wildlife Management Area, N of Jason Lake and of jct of Botany Bay Rd. and Rabbit Rd., 20.xii.2013, on *Quercus*, J.C. Lendemer et al. 42286 (NY). **CHESTER CO.:** Chester, 30.i.1886, on *Acer*, H.A. Green s.n. (NY). **COLLETON CO.:** Donnelley Wildlife Management Area, 0.1 mi NE of Pineland Rd., 18.xii.2013, on *Quercus*, J.C. Lendemer et al. 41817 (NY). **FLORENCE CO.:** 3 mi NW of Lake City, 29.i.1967, G.T. Johnson s.n. (NY). **PICKENS CO.:** along Eastatoe Creek on W side of Twisting Pine Mountain, 27.ix.1989, W.R. Buck 17696 (NY). **YORK CO.:** 5 mi SE of Blacksburg, 27.i.1967, G.T. Johnson s.n. (NY). **TENNESSEE** **ANDERSON CO.:** 5 mi NW of Oliver Springs, 4.ix.1960, on *Acer*, G.T. Johnson s.n. (NY). **BLOUNT CO.:** Great Smoky Mountains National Park, Abrams Creek, Rabbit Creek Trail, 30.vii.2010, on *Fagus*, W.R. Buck 56432 (NY). **CARTER CO.:** Doe River Gorge, ~1 mi N of US19E, 26.ix.1993, on *Acer*, R.C. Harris 30985 (NY). **COCKE CO.:** Great Smoky Mountains National Park, Gabes Mountain Trail 0–2 mi E of jct w/ Maddron Bald Trail, 5.viii.2009, on *Carpinus*, J.C. Lendemer 19029 & E. Tripp (NY). **SEVIER CO.:** Great Smoky Mountains National Park, Bullhead Trail, 0–5 mi from parking area on Cherokee Orchard Rd., 9.x.2011, on *Betula*, E. Tripp et al. 2138 (NY). **WHITE CO.:** 5 mi E of Sparta, 10.ix.1960, G.T. Johnson s.n. (NY). **WILSON CO.:** Cedars of Lebanon State Park, 6.iv.1967, on *Quercus*, R.C. Harris 1266-C (NY). **TEXAS.** **WALKER CO.:** 4 mi E of Huntsville, 10.vii.1965, G.T. Johnson s.n. (NY). **VERMONT.** **ADDISON CO.:** Green Mountain National Forest, Bristol Cliffs Wilderness Area, W-facing slopes of South Mountain, 20.x.2010, on *Quercus*, J.C. Lendemer 27342 & M. Sundue (NY). **CHITTENDEN CO.:** Underhill, 20.vi.1951, on *Fagus*, R.F. Cain 25556 (NY). **ESSEX CO.:** Victory State Forest, Umpire Mountain, 16.v.2008, on *Fagus*, R.C. Harris 54392 (NY). **RUTLAND CO.:** Brandon, 27.iv.1924, D.L. Dutton 2128 (NY). **WINDHAM CO.:** Newfane, x.1892, A.J. Grout x150 (NY). **VIRGINIA.** **ACCOMACK CO.:** Chincoteague Island, 13.iv.1963, C.F. Reed 61382 (NY). **CHESAPEAKE CITY:** Great Dismal Swamp National Wildlife Refuge, SW corner of int of Persimmon Ditch and Myrtle Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30891 (NY). **GILES CO.:** Cascades Recreation Area on Little Stoney Creek, 23.vi.1978, on *Acer*, R.C. Harris 12890 (NY). **GLOUCESTER CO.:** SW jct of Hickory Fork Rd. and Cedar Bush Rd., 4.xi.2014, on *Quercus*, J. Hollinger 6888 (NY). **GRAYSON CO.:** Grayson Highlands State Park, Wilburn Ridge, 12.ix.1991, on *Fagus*, W.R. Buck 20657 (NY). **MECKLENBURG CO.:** 5 mi S of Clarksville, xi.1954, on *Quercus*, W.L. Culberson s.n. (NY). **PATRICK CO.:** Blue Ridge Parkway, Rock Castle Gorge Loop Trail, 6.x.1995, on *Acer*, R.C. Harris 36668 (NY). **SHENANDOASH CO.:** Elizabeth Furnace Recreation Area, Green Mountain, Signal Knob Trail, 18.xi.1985, J.G. Guccion 102 (NY). **SUFFOLK CITY:** Great Dismal Swamp National Wildlife Refuge, Railroad Ditch ¾ mi E of entrance on Desert Rd., 12.xii.2009, on *Acer*, J.C. Lendemer 20392 & B.P. Hodgkinson (NY). **YORK CO.:** Waller Mill Park, 3.vii.2004, on *Fagus*, B.P. Hodgkinson 828 (NY). **WEST VIRGINIA.** **PENDLETON CO.:** Monongahela National Forest, Fanny Bennett Hemlock Grove, 20.iv.2001, on *Fagus*, M.S. Cole 8640 (NY). **POCAHONTAS CO.:** Spruce, ii.1923, on *Fagus*, F.W. Gray L137 (NY).

NOTE × – *SCHISMATOMMA GRAPHIDIODES* NEW TO NORTH AMERICA

Schismatomma graphidioides (Leight.) Zahlbr., Öst. Bot. Z., 68: 154. 1919. ≡ *Chiodecton graphidioides* Leight., Ann. Mag. Nat. Hist., ser. 2, 13: 395. 1854. ≡ *Enterographa graphidioides* (Leight.) Almb., Bot. Notiser, 1942: 391. 1942. **TYPE: IRELAND:** Loughlinstown, without collector or date [hb. Borrer] (BM[n.v.], holotype).

Notes. – *Schismatomma pericleum* (Ach.) Branth & Rostr. is a crustose lichen that is widespread in Europe (Bielczyk et al. 2004, Czarnota & Krzewicka 2004, Malíček & Palice 2015, Tehler 1993), southwest Asia (Navrotskaya et al. 1996, Yildiz & John 2002), and North America (Tehler 1993). It is a rare species in eastern North America that has been reported from scattered locations in northeastern temperate regions and from the southern Appalachian Mountains (Tehler 1993). In 2015 Kevin England, a colleague from Alabama, donated a suite of specimens from near his home in Bankhead National Forest near the southern terminus of the Appalachian Mountains. While examining a specimen of *Arthonia rubella* (Fée) Nyl., one of us (JCL) noticed several admixed thalli of *Schismatomma*. Although the thalli were well developed and the apothecia elongate and weakly branching, he assumed it represented an extreme morph-

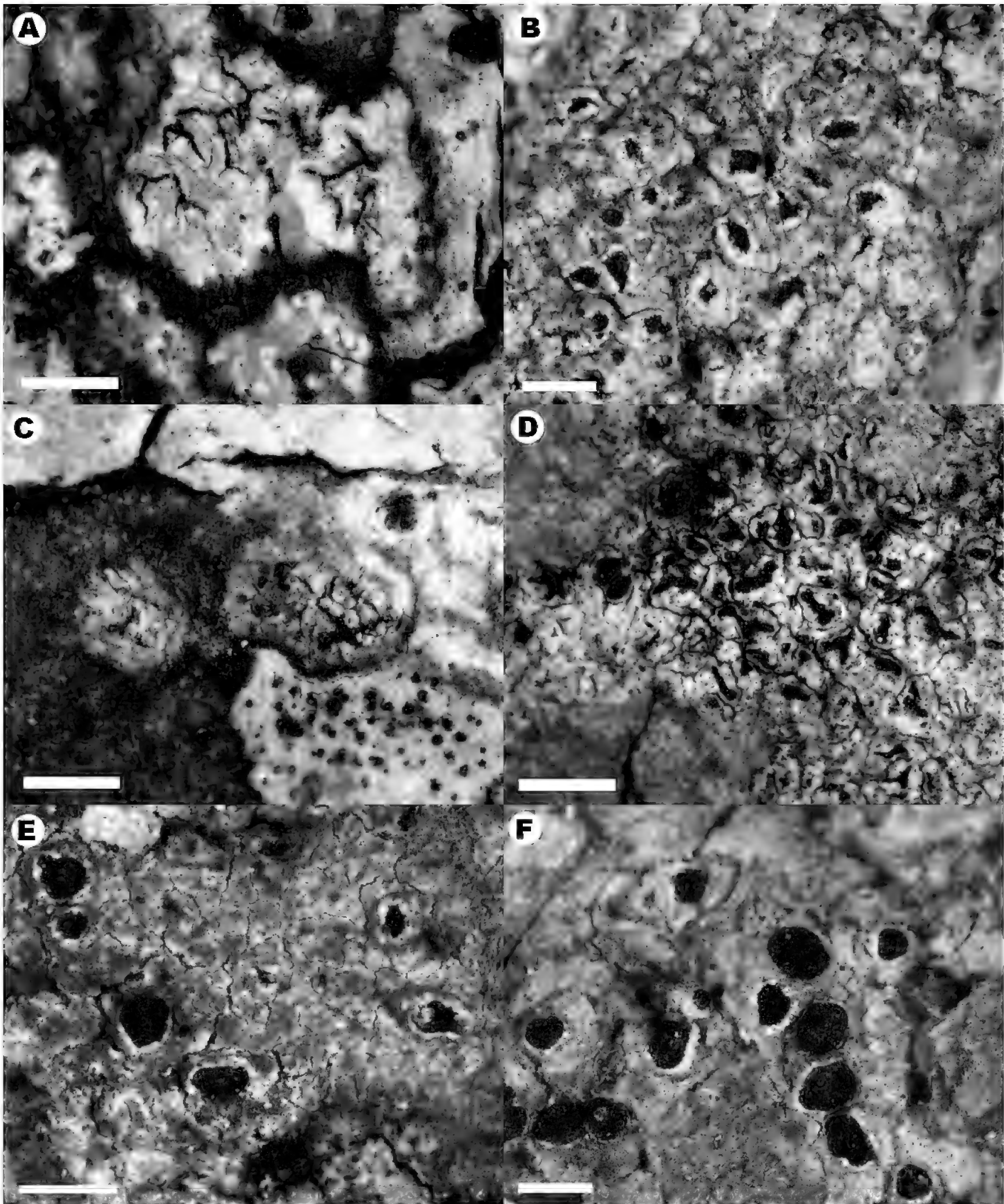


Figure 13. Comparison between *Schismatomma graphidioides* (A-D) and *S. pericleum* (E and F). A, morphology of *S. graphidioides* as exemplified by an isotype (C. Sbarbaro s.n.) of its synonym *Enterographa italica*. B, morphology of *S. graphidioides* from New Jersey, U.S.A. (Lendemer 3372, NY). C and D, morphology of *S. graphidioides* from Alabama, U.S.A. (England 5272, NY). E, morphology of *S. pericleum* from Tennessee, U.S.A. (Tripp *et al.* 2684, NY). F, morphology of *S. pericleum* from Switzerland (E. Frey 27538, NY). Scales all = 1.0 mm.

-otype of the variable species *S. pericleum* (Tehler 1993). Upon examining the specimen later, RCH questioned the identification, which led us to the name *S. graphidioides*.

Schismatomma graphidioides has long been treated as a rare European endemic that differs from *S. pericleum* in having a thicker, more well developed thallus that is smooth and lighter in color, as well as ascomata that are distinctly elongate and branched (vs. short and relatively unbranched). Comparison of the specimens from Alabama (Figures 13C and D) and New Jersey (Figure 13B) with an isotype of *Enterographa italica* B. de Lesd. (Figure 13A), which was treated as a synonym of *S. graphidioides* by Tehler (1993) confirmed that it represents the first report of the species from North America. We reexamined all of the North American vouchers of *S. pericleum* at NY (cited below) and confirmed that all but one, from the Coastal Plain of southern New Jersey, represent that taxon rather than *S. graphidioides*.

Specimens of *Schismatomma graphidioides* examined. – **ITALY:** Liguria orient. prope Genuam, iii.1931, on *Castanea*, *C. Sbarbaro s.n.* = *Lichenotheca Exsiccati* No. 2 (NY!, isotype of *Enterographa italica*). **U.S.A. ALABAMA.** LAWRENCE CO.: 0.48 air mi SW of Moulton, H.A. Alexander Park, 22.ii.2015, on *Carya*, *K. England 5272 & J. England* (NY). **NEW JERSEY.** ATLANTIC CO.: Wharton State Forest, N of Pleasant Mills Cemetery, 24.x.2004, on *Quercus*, *J.C. Lendemer 3372* (NY).

Selected specimens of Schismatomma pericleum examined. – **ITALY.** UMBRIA: Valle San Martino, Perugia, 19.vi.1998, on *Castanea*, *S. Ravera s.n.* (NY). **SWITZERLAND.** BERNE: Berner Oberland, Amt Saanen, Lauenen, 19.viii.1961, on *Abies/Picea*, *E. Frey 27538* (NY). **U.S.A. MICHIGAN.** GOGEBIC CO.: Ottawa National Forest, NE of Bobcat Lake, 19.vii.1975, on *Thuja*, *W.R. Buck B261-b* (NY [!A. Tehler 1995]). **TENNESSEE.** BLOUNT CO.: Great Smoky Mountains National Park, Rabbit Creek Trail 0–2.7 mi E of Abrams Creek, 24.vi.2011, on *Pinus*, *E. Tripp et al. 2684* (NY). **HAMILTON CO.:** Chickamauga Gorge, 12 mi from Chattanooga, on *Tsuga*, *W.W. Calkins 141* (NY).

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Physconia subpallida new to Québec, from Gatineau Park

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ABSTRACT. – *Physconia subpallida* is endemic to eastern North America and was once widespread. Over the past century it has declined considerably throughout its range. Currently, it is only known from a small number of extant populations, the largest of which is in southeastern Ontario. In Canada, it is listed as endangered both federally and provincially. Here, we report the first records of *P. subpallida* in Québec from Gatineau Park.

KEYWORDS. – Appalachians, biogeography, COSEWIC, COSSARO, Great Lakes, rare species.

INTRODUCTION

Physconia subpallida Essl. is a medium-sized lichen (thalli <8 cm in diameter) that is characterized by a pale lower surface, dark squarrose rhizines, the absence of isidia or soredia, and a densely pruinose upper surface (Esslinger 1994). Images and detailed descriptions of this species have been provided by Esslinger (1994) and McMullin (2015). It is endemic to eastern North America, where it was once widespread, but it has declined considerably over the past century (COSEWIC 2009, McMullin 2015). The largest extant population is in southeastern Ontario (COSEWIC 2009, McMullin 2015). In Canada, *P. subpallida* is the only inland (i.e., non-coastal) lichen federally listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009). It was previously only known to occur in Ontario (McMullin 2015), where it is provincially listed as endangered by the Committee on the Status of Species at Risk in Ontario (Government of Ontario 2015). Here, we report the first occurrence in Québec from Gatineau Park (Fig. 1).

MATERIALS AND METHODS

Study Site. – Gatineau Park is managed by the National Capital Commission and includes federal, provincial, and private lands. It is in the Outaouais region of Québec and covers 363 km² northwest of Gatineau and Ottawa (Fig. 1). The park contains a wide variety of habitats (Freebury 2011), but our survey was restricted to a mixed-wood deciduous forest with tree cover dominated by *Acer saccharum* (sugar maple), *Fagus grandifolia* (American beech), *Ostrya virginiana* (ironwood), *Quercus alba* (white oak), and *Q. rubra* (red oak) (Fig. 2A).

Surveying. – We conducted visual surveys at selected sites in the King Mountain area of Gatineau Park that appeared to have similar habitats to those colonized by *Physconia subpallida* in Ontario – following the habitat descriptions of McMullin (2015). At each site, we followed the floristic habitat sampling methods described by Newmaster et al. (2005). Images were captured with a Nikon D3100 digital camera. Maps were produced in QGIS 2.8 and modified in Adobe Photoshop CS6.

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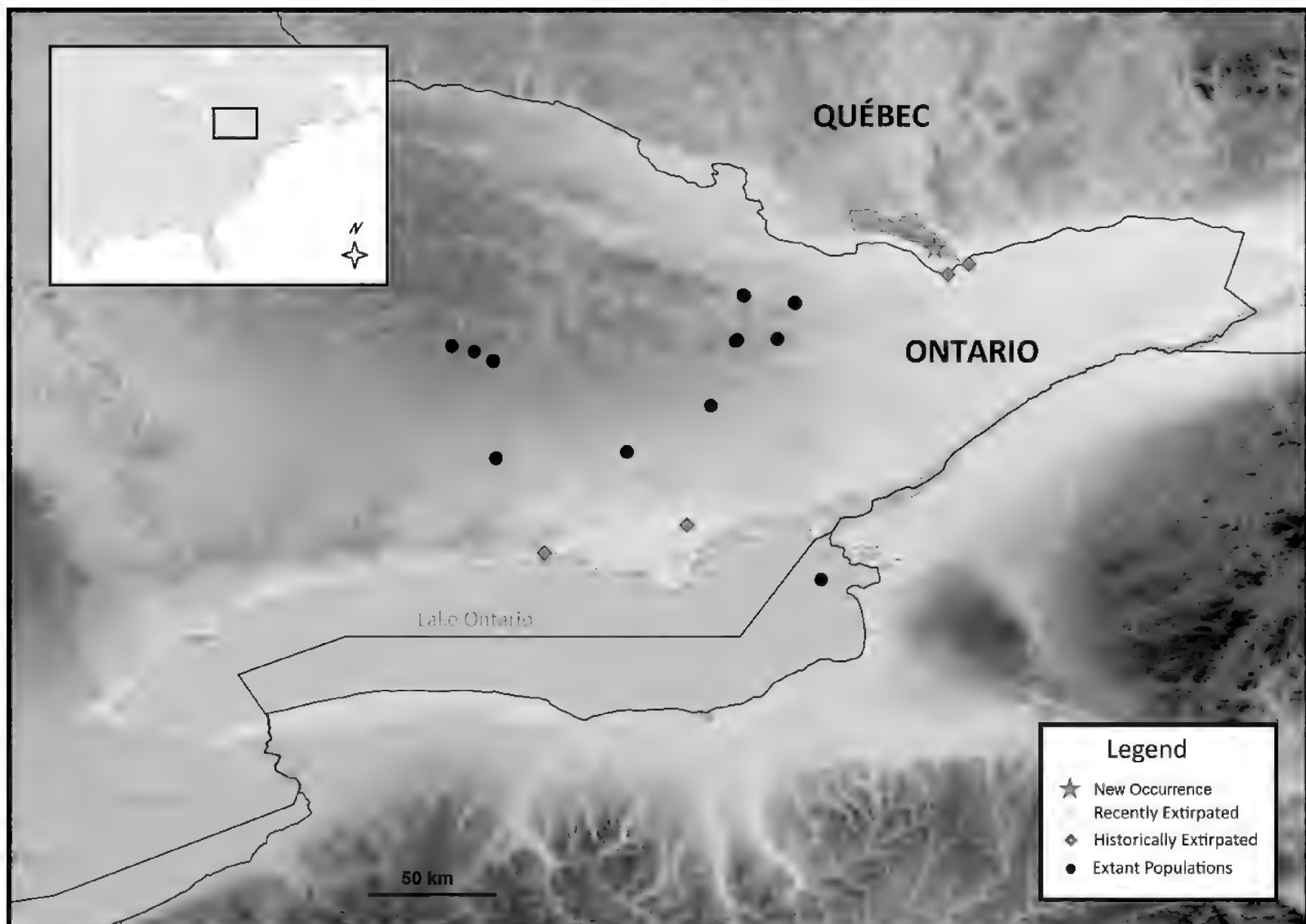


Figure 1. Location of all reported *Physconia subpallida* records in Canada. The first Québec record, indicated by a star, was from Gatineau Park, in green.

RESULTS

Five thalli of *Physconia subpallida* were observed and photographed on the trunks of two trees. Three thalli were found on *Quercus alba* (Fig. 2B) and two thalli were found on *Ostrya virginiana* (Fig. 2C). All five thalli were sterile (i.e., apothecia were absent).

DISCUSSION

The five thalli of *Physconia subpallida* we discovered are the first records in the province of Québec. They also represent the only lichen in Québec that is federally listed as endangered. Its occurrence on *Quercus alba* is unusual, but not surprising. Recent collections and observations have been made primarily from *Ostrya virginiana* and *Fraxinus* species, but historical collections are known from a wider variety of tree species and even rock (Esslinger 1994, COSEWIC 2009, McMullin 2015).

Search effort for *Physconia subpallida* in Canada has increased since it was listed by COSEWIC (2009) and the number of extant localities reported in the country has increased from two to twelve, which includes our new Québec locality (McMullin 2015). Historically, it was widespread in eastern North America (Esslinger 1994, COSEWIC 2009, McMullin 2015). Most populations, however, have been extirpated. In the United States, all populations (~30) are historical except three, one each in Oklahoma, Tennessee, and Virginia (Esslinger 1994, COSEWIC 2009, J.C. Lendemer pers. comm., R.C. Harris pers. comm.). It has not been recollected at the majority of the historical localities despite, in many cases, extensive fieldwork that would presumably have uncovered it. The largest extant population is in southeastern Ontario and along its border in southwestern Québec. Our discovery suggests that continued survey efforts in unexplored areas with potential habitat in southern Ontario, southern Québec, and the Appalachians could reveal additional localities of this rare and declining species.



Figure 2. *Physconia subpallida* in Gatineau Park, Québec. A, habitat. B, one of the three thalli discovered on *Quercus alba*, scale = 1.5 cm. C, two thalli on *Ostrya virginiana*, scale = 1 cm.

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A Cumulative Checklist for the Lichen-Forming, Lichenicolous and Allied Fungi of the Continental United States and Canada, Version 21

THEODORE L. ESSLINGER¹

ABSTRACT. – Version 21 of the checklist of lichen-forming, lichenicolous and allied fungi occurring in North America north of Mexico is presented. It includes a total of 5,421 species in 733 genera, with an additional 41 subspecies, 45 varieties, and 3 forms. The total species number includes 588 lichenicolous fungi, 96 saprophytic fungi related to lichens or to lichenicolous fungi, and another 53 species of varying and/or uncertain biological status.

KEYWORDS. – Canada, floristics, lichens, nomenclature, United States.

INTRODUCTION

This checklist consists of cumulative updates to the most recently published North American checklist by Esslinger and Egan (1995). The style and conventions for listings used there are also generally followed here. Within each genus the accepted names are given first and are in boldface. Names considered to be synonyms are given in normal font only. Significant changes made since the previous online version are given in blue font. As before, the following symbols are used to indicate the lichenicolous fungi and other allied fungi: * = lichenicolous fungi (parasites on living lichens), + = saprophytic fungi related to either lichens or lichenicolous fungi, on various substrates, # = various fungi of uncertain status: e.g., those which are questionably or weakly lichen-forming; or algicolous/saprophytic; or parasitic when young but saprophytic or lichen-forming when mature; or lichenicolous lichens.

The first North American (north of Mexico) lichen checklist produced by Mason Hale and Bill Culberson in 1956 (*Castanea* 21: 73-105) listed 2,280 species in 193 genera (their count), and included few or no lichenicolous or allied fungi. Almost forty years later, the first checklist version with which I was involved (Esslinger & Egan 1995) reported 3,580 lichen species and another 219 species of lichenicolous and allied fungi, all in 477 genera. The count for this current version (#21) is 5,421 total species in 733 genera, with an additional 41 subspecies, 45 varieties, and 3 forms. The total species number includes 588 lichenicolous fungi (*), 96 saprophytic fungi related to lichens or to lichenicolous fungi (+), and another 53 species of varying and/or uncertain biological status (#).

This list is updated at semi-regular intervals, usually about once each year, as changes accumulate in the literature. I would appreciate being informed of any oversights or omissions, and although not all taxonomic or nomenclatural differences of opinion will be easily or immediately settled, any polite opinions that users would like to share will be welcomed and taken under consideration. Additions or changes appearing in this version of the checklist represent reports in the literature, and their presence here does not necessarily imply endorsement by the author. In addition to inviting comments or corrections, it would be very helpful if authors of publications containing additions to the North American lichen biota, or other taxonomic and nomenclatural changes that impact it, would provide me with copies.

Previous versions of the checklist have been published online (Version #1 dated 1 December 1997 through Version #20 dated 19 April 2015). Beginning with this version (Version #21) the checklist is being simultaneously published in *Opuscula Philolichenum* and online at the usual site hosted at North Dakota

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State University: <http://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm>. The purpose of dual publication is to provide a standard formatted journal article that can be cited, to assure permanent archiving of each version, and to facilitate dissemination of the checklist to those outside of the lichenological community via indexing services such as Scopus. Although there are minor organizational differences in the introductory sections of this and the online edition, the bodies of the two editions are identical except for indenting.

CHECKLIST

ABROTHALLUS De Not.

- ***acetabuli** Diederich (Kocourkova et al. 2012)
- ***bertianus** De Not.
- ***bryoriarum** Hafellner
- ***caerulescens** Kotte (Diederich 2003)
- ***cetrariae** Kotte (Goward et al. 1996)
- ***cladoniae** R. Sant. & D. Hawksw.
- ***eriodermæ** Suija, Etayo & Pérez-Ortega (Suija et al. 2015)
- ***ertzii** Suija, & Pérez-Ortega (Suija et al. 2015)
- ***halei** Pérez-Ortega, Suija, D. Hawksw. & R. Sant. (Suija et al. 2011)
- ***hypotrachynæ** Etayo & Diederich (Lendemer & Knudsen 2008b)
- ***microspermus** Tul. (Cole & Hawksworth 2001)
- ***nephromatis** Suija, & Pérez-Ortega (Suija et al. 2015)
- ***parmeliarum** (Sommerf.) Arnold
- ***peyritschii** (Stein) Kotte
- ***pezizicola** Diederich & R. C. Harris (Diederich 2003)
- ***prodiens** (Harm.) Diederich & Hafellner
- ***secedens** Wedin & R. Sant. (Spribille et al. 2010)
- ***suecicus** (Kirschst.) Nordin (Diederich 2003)
- ***tulasnei** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- ***usneae** Rabenh. (Cole & Hawksworth 2001)
- ***welwitschii** Mont. ex Tul.
- ***oxysporus** Tul. = *Phacopsis oxyspora*
- ***usneae** auct. non Rabenh. = *Lichenostigma maureri*

ABSCONDITELLA Vězda

- amabilis** T. Sprib. (Spribille et al. 2009)
- celata** Döbbeler & Poelt (Spribille et al. 2009)
- lignicola** Vězda & Pišút (Nash et al. 1998)
- sphagnorum** Vězda & Poelt
- trivialis** (Willey ex Tuck.) Vězda

ACANTHOTHECIS Clem.

- aurantiaca** (Müll. Arg.) Staiger & Kalb Syns.: *Graphina intertexta*, *Graphis intertexta* (Staiger 2002)
- floridana** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- gracilis** Staiger & Kalb (Staiger & Kalb 1999)
- leucopepla** (Tuck.) E. Tripp & Lendemer Syns.: *Graphis leucopepla*, *Graphina abaphoides* (Tripp et al. 2010)
- leucoxanthoides** Lendemer (Lendemer & Harris 2014a)
- mosquitensis** (Tuck.) E. Tripp & Lendemer Syns.: *Graphis mosquitensis*, *Graphina subvirginalis* (Tripp et al. 2010)
- paucispora** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- peplophora** (M. Wirth & Hale) E. Tripp & Lendemer Syn.: *Graphina peplophora* (Tripp et al. 2010)
- poitaeoides** (M. Wirth & Hale) E. Tripp & Lendemer Syn.: *Graphis poitaeoides* (Tripp et al. 2010)
- abaphoides* (Nyl.) Staiger & Kalb (Staiger & Kalb 1999) = *A. leucopepla*
- intertexta* (Müll. Arg.) Staiger & Kalb = *A. aurantiaca*

ACAROCONIUM Kocourk. & D. Hawksw. (Kocourková & Hawksworth 2008)
***punctiforme** Kocourk. & D. Hawksw. (Kocourková & Hawksworth 2008)

ACAROSPORA A. Massal.

affinis K. Knudsen (Knudsen 2007a)
brodoana K. Knudsen, Kocourk. & M. Westb. (Knudsen et al. 2016)
americana H. Magn. (Knudsen et al. 2011b)
asahinae H. Magn.
badiofusca (Nyl.) Th. Fr. Syn.: *Sarcogyne athroocarpa* (Knudsen & Kocourková 2013)
boulderensis H. Magn. (Knudsen et al. 2014b; McCune et al. 2014b)
brattiae K. Knudsen (Knudsen 2007a)
brouardii B. de Lesd. (Knudsen 2007a, Knudsen et al. 2008a)
calcareo K. Knudsen (Knudsen 2007a)
canadensis H. Magn.
cervina A. Massal.
chrysops (Tuck.) H. Magn. (Knudsen et al. 2008a)
clauzadeana (Llimona) Casares & Hafellner Syn.: *Biatorella clauzadeana*
coloradiana H. Magn.
complanata H. Magn.
contigua H. Magn. (Brodo et al. 2001, Knudsen 2007a)
elevata H. Magn.
epilutescens Zahlbr. (Knudsen 2005a)
erythrophora H. Magn. (Knudsen 2007a)
fuscata (Schrader) Arnold
fuscescens H. Magn.
glaucocarpa (Ach.) Körber
heufleriana Körber
hilaris (Dufour) Hue
impressula Th. Fr.
#**interjecta** H. Magn.
janae K. Knudsen (Lumbsch et al. 2011)
macCarthyi K. Knudsen & Kocourk. (Knudsen & Kocourková 2015)
macrospora (Hepp) A. Massal. ex Bagl.
moenium (Vainio) Räsänen (Nordin et al. 2009)
molybdina (Wahlenb.) Trevisan
#**nashii** K. Knudsen (Knudsen 2011a)
nevadensis H. Magn.
nicolai B. de Lesd. (Knudsen & Morse 2009)
nodulosa (Dufour) Hue var. **nodulosa**
novomexicana H. Magn. (Knudsen 2007a)
obnubila H. Magn.
obpallens (Nyl. ex Hasse) Zahlbr. Syn.: *Lecanora obpallens*
oligospora (Nyl.) Arnold
orcuttii K. Knudsen (Knudsen 2010 [2011])
oreophila K. Knudsen (Knudsen 2007a)
peliscypha Th. Fr.
piedmontensis K. Knudsen (Knudsen et al. 2011b)
robiniae K. Knudsen (Knudsen 2007a)
rosulata (Th. Fr.) H. Magn. (Knudsen et al. 2010)
rouxii K. Knudsen, Elix & Reeb (Knudsen 2007a, Knudsen et al. 2008a)
rugulosa Körber
saepincola H. Magn.
schleicheri (Ach.) A. Massal.
scotica Hue
sinopica (Wahlenb.) Körber
socialis H. Magn.

sparsa H. Magn.
sphaerosperma R. C. Harris & K. Knudsen (Knudsen et al. 2011b)
#stapfiana (Müll. Arg.) Hue
strigata (Nyl.) Jatta
succedens H. Magn.
thamnina (Tuck.) Herre
thelococcoides (Nyl.) Zahlbr. Syns.: *Lecanora thelococcoides*, *L. pleiospora*, *L. pleistospora*
tongletii Hue
tuckerae K. Knudsen (Knudsen 2007a)
veronensis A. Massal.
aeruginosa Hasse = *Caeruleum heppii*
albida H. Magn. = *A. epilutescens*
albomarginata (Herre) G. Salisb. = *A. elevata* (Knudsen 2007a)
amabilis H. Magn. = *A. socialis* (Knudsen 2007a)
amphibola Wedd. = *Myriospora smaragdula*
amphibola sensu auct. = *Myriospora rhagadiza*
applanata H. Magn. = *A. veronensis* (Knudsen 2007a)
**arenacea* H. Magn. = *Polysporina arenacea* (Knudsen & Kocourková 2008a)
arenosa Herre = *Sarcogyne arenosa*
asperata H. Magn. = *A. boulderensis* (Kocourková et al. 2014b)
bella (Nyl.) Jatta = *A. rhabarbarina* (Knudsen et al. 2008a), but a misidentification for North America (Knudsen & Kocourková 2012a)
bullata Anzi = misidentification for North America (Knudsen et al. 2010)
caesiofusca (Müll. Arg.) H. Magn. = *A. nicolai*
californica Zahlbr. = *A. badiofusca* (Knudsen 2007a)
carnegiei Zahlbr. = *A. obpallens* (Knudsen 2005b)
cartilaginea H. Magn. = *A. fuscata*
chlorophana (Wahlenb.) A. Massal. = *Pleopsidium chlorophanum*
cineracea (Nyl.) Wedd. = misidentification for North America
cinereoalba (Fink) H. Magn. = *A. americana* (Knudsen et al. 2011b)
citrina (Taylor) Zahlbr. = misidentification for North America (Knudsen & Flakus 2016)
desolata H. Magn. = *Sarcogyne desolata*
dispersa H. Magn. = *Trimmatothelopsis dispersa*
dissipata H. Magn. = *A. schleicheri*
evoluta H. Magn. = *A. socialis* (Knudsen 2007a)
flava (Bellardi) Ach. = *Pleopsidium flavum*
gallica H. Magn. = *A. janae* for North American reports (Knudsen et al. 2011b)
geogena H. Magn. = *A. nodulosa* (Knudsen 2007a)
geophila H. Magn. = *A. nodulosa*
glebosa (Flotow) Körber = *A. oligospora*
hassei Herre (Knudsen 2007a) = *Myriospora hassei* (Arcadia & Knudsen 2012)
heppii (Nägeli ex Hepp) Nägeli ex Körber = *Caeruleum heppii*
immersa Fink = *Caeruleum immersum*
incertula H. Magn. = *A. novomexicana* (Knudsen 2007a)
instrata H. Magn. = *A. obpallens* (Lendemer et al. 2008c)
intercedens H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)
interposita H. Magn. = *A. thamnina* (Knudsen 2007a)
interspersa H. Magn. = *A. succedens* (Knudsen 2011a)
lapponica (Ach. ex Schaerer) Th. Fr. = *Sarcogyne lapponica* (see note there)
**lapponica* auct. N.A. = *Polysporina subfuscescens*
montana H. Magn. = *A. rugulosa*
nigromarginata B. de Lesd. = *A. strigata* (Knudsen 2007a)
nitida H. Magn. (Weber & Wittman 2000) = *A. elevata* for North American records (Knudsen 2007a)
nodulosa (Dufour) Hue var. *reagens* Zahlbr. = *A. nodulosa*
obscura H. Magn. = *A. veronensis* (Knudsen 2007a)
ocellata H. Magn. = *A. schleicheri*

oxytona (Ach.) A. Massal. = *Pleopsidium flavum*
 particularis H. Magn. = *Myriospora hassei* (Knudsen 2007a, Arcadia & Knudsen 2012)
 peltastica Zahlbr. = *A. strigata* (Knudsen & Lendemer 2005b)
 peltata Hasse = *A. strigata* (Knudsen 2007a)
 pleiospora (Nyl.) Hasse. = *A. thelococcoides* (Lendemer 2004a)
 pleistospora (Nyl.) Hasse = *A. thelococcoides* (Lendemer 2004a)
 pyrenopsoides H. Magn. = misidentification for North America (Knudsen & Kocourková 2010a)
 radicata H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)
 reagens Zahlbr. = *A. nodulosa* (Knudsen 2007a)
 rhabarbarina Hue (Knudsen et al. 2008a) = misidentification for North America (Knudsen & Kocourková 2012a)
 rhagadiosa (Ach.) Th. Fr. = *Glypholecia scabra*
 rimulosa H. Magn. = *A. socialis* (Knudsen 2007a)
 rubicunda H. Magn. = *A. heufleriana* (Knudsen 2007a)
 rufescens (Ach.) Bausch = *Myriospora smaragdula*
 saxicola Fink = *Glypholecia scabra*
 scabra (Pers.) Th. Fr. = *Glypholecia scabra*
 scabrida Hedl. ex H. Magn. = *Myriospora scabrida*
 smaragdula (Wahlenb.) A. Massal. = *Myriospora smaragdula*
 smaragdula var. lesdainii (Harm. ex A.L. Smith) H. Magn. (Knudsen 2004a) = *Myriospora smaragdula*
 squamulosa (Schrader) Trevisan = *A. macrospora* (Knudsen 2007a)
 squamulosa sensu Th. Fr. = *A. macrospora*
 stenospora (Stizenb.) Hue = *Pleopsidium flavum*
 subalbida H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)
 subcontigua H. Magn. = *A. schleicheri*
 *subfuscescens (Nyl.) H. Magn. = *Polysporina subfuscescens*
 subrufula (Nyl.) H. Olivier (McCune et al. 1997) Report based on a specimen of *Myriospora smaragdula* (Knudsen 2007b)
 superfusa H. Magn. = *A. americana* (Lendemer & Knudsen 2011, Knudsen et al. 2011b)
 tenebrica H. Magn. = *A. veronensis* (Knudsen 2007a)
 terricola H. Magn. = *Trimmatothelopsis terricola* (Knudsen & Lendemer 2016)
 texana H. Magn. = *Pleopsidium chlorophanum*
 thermophila Herre = *A. thamnina* (Knudsen 2007a)
 tucsonensis H. Magn. = *A. obpallens* (Knudsen 2007a)
 umbilicata Bagl. (Harris & Ladd 2005) North American records are *Acarospora nicolai* (Knudsen et al. 2011b)
 utahensis H. Magn. = *A. strigata* (Knudsen & Lendemer 2005b)
 variegata H. Magn. = *A. tongleti*
 washingtonensis H. Magn. = *A. elevata* (Knudsen 2007a)
 weldensis H. Magn. = *Pleopsidium chlorophanum*
 xanthophana (Nyl.) Jatta = misidentification for North America (Knudsen 2008a)

ACOLIUM (Ach.) Gray

carolinianum Tuck. = *Bathelium carolinianum*
 tympanellum (Ach.) Gray = *Cyphelium inquinans*

ACREMONIUM Link

***strictum** W. Gams (Spribille et al. 2010)

ACROCORDIA A. Massal.

cavata (Ach.) R. C. Harris Syn.: *Arthopyrenia cavata*
conoidea (Fr.) Körber Syn.: *Arthopyrenia conoidea*
gemmata (Ach.) A. Massal. Syns.: *Arthopyrenia gemmata*, *A. alba*, *A. sphaeroides* (Lendemer & Harris 2014b)
megalospora (Fink) R. C. Harris Syns.: *Arthopyrenia macrospora*, *A. finkii*, *Pyrenula megalospora*

ACROSCYPHUS Lév.
sphaerophoroides Lév.

ACTINOGYRA Schol. = **UMBILICARIA**
muhlenbergii (Ach.) Schol. = *Umbilicaria muhlenbergii*
muhlenbergii var. alpina (Tuck.) Llano = *Umbilicaria muhlenbergii*
polyrrhiza (L.) Schol. = *Umbilicaria polyrrhiza*

ADELOCOCCUS Theissen & Sydow
***alpestris** (Zopf) Theissen & Sydow

ADELOLECIA Hertel & Hafellner
kolaensis (Nyl.) Hertel & Rambold Syn.: *Lecidea conferenda*
pilati (Hepp) Hertel & Hafellner Syn.: *Lecidea pilati*, *L. lyngeana*, *L. subauriculata* Lynge non B. de Lesd.
sonorae Hertel (Hertel 2004)

AGONIMIA Zahlbr.
allobata (Stizenb.) P. James (Fryday 2001)
gelatinosa (Ach.) M. Brand & Diederich Syn.: *Polyblastia gelatinosa* (Sérusiaux et al. 1999)
opuntiella (Buschardt & Poelt) Vězda (Lendemer 2004c)
tristicula (Nyl.) Zahlbr. Syn.: *Polyblastia tristicula*
vouauxii (B. de Lesd.) M. Brand & Diederich (Freebury 2014)

AGRESTIA J. W. Thomson = **CIRCINARIA**
cyphellata J. W. Thomson = *Circinaria hispida*
hispida (Mereschk.) Hale & W. L. Culb. = *Circinaria hispida*

AGYRIUM Fr.
***rufum** (Pers.) Fr.

AGYROPHORA (Nyl.) Nyl. = **UMBILICARIA**
leiocarpa (DC.) Gyelnik = *Umbilicaria leiocarpa*
lyngei (Schol.) Llano = *Umbilicaria lyngei*
rigida (Du Rietz) Llano = *Umbilicaria rigida*
scholanderi Llano = *Umbilicaria scholanderi*

AHLESIA Fuckel = **THELOCARPON**
sphaerospora (H. Magn.) G. Salisb. = *Thelocarpon sphaerosporum*

AHTIANA Goward
aurescens (Tuck.) A. Thell & Randle Syn.: *Cetraria aurescens*, *Tuckermannopsis aurescens* (Thell et al. 1995)
pallidula (Tuck. ex Riddle) Goward & A. Thell Syn.: *Cetraria pallidula*, *Tuckermannopsis pallidula* (Thell et al. 1995)
sphaerosporella (Müll. Arg.) Goward Syn.: *Parmelia sphaerosporella*

AINOA Lumbsch & I. Schmitt (Lumbsch et al. 2001)
bella Brodo & Lendemer (Brodo & Lendemer 2015)
mooreana (Carroll) Lumbsch & I. Schmitt Misidentification for North America (Brodo & Lendemer 2015)

ALECTORIA Ach.
fallacina Motyka
imshaugii Brodo & D. Hawksw.
lata (Taylor) Lindsay

ochroleuca (Hoffm.) A. Massal.
sarmentosa (Ach.) Ach.
sorediosa (Lång ex Räsänen) McMullin & Lendemer (McMullin et al. 2016)
vancouverensis (Gyelnik) Gyelnik ex Brodo & D. Hawksw.
vexillifera (Nyl.) Stizenb. (McMullin et al. 2016)
abbreviata (Müll. Arg.) R. Howe = Nodobryoria abbreviata
achariana Gyelnik = Bryoria pseudofuscescens
altaica (Gyelnik) Räsänen = Bryoria nadvornikiana
ambigua Motyka = Bryoria ambigua
americana Motyka = Bryoria americana
bicolor (Ehrh.) Nyl. = Bryoria bicolor
boryana Delise = Gowardia nigricans
californica (Tuck.) G. Merr. = Kaernefeltia californica
cana (Ach.) Leighton = Bryoria pikei
canadensis Motyka = Bryoria trichodes subsp. trichodes
capillaris (Ach.) Crombie = Bryoria capillaris, but N.A. records are B. pikei (Velmala et al. 2014)
cervinula Motyka = Bryoria cervinula
cetrariza Nyl. = Kaernefeltia californica
chalybeiformis (L.) Gray = Bryoria fuscescens
corneliae Gyelnik = Bryoria fremontii
delicata Motyka = a nomen nudum = Bryoria trichodes subsp. trichodes
divergens (Ach.) Nyl. = Bryocaulon divergens
fremontii Tuck. = Bryoria fremontii
fuscescens Gyelnik = Bryoria fuscescens
gowardii Lumbsch (Lumbsch & Huhndorf 2010) = Gowardia arctica
glabra Motyka = Bryoria glabra
haynaldii Gyelnik = misidentification for North America
implexa (Hoffm.) Nyl. = Bryoria implexa, a European species; N. A. records are B. kockiana
irvingii Llano = Bryoria nitidula
jubata (L.) Ach. Commonly confused and misused name applied to various pendent species of Bryoria (Brodo & Hawksworth 1977)
lanea auct. non (Hoffm.) Vainio = Bryoria nitidula
lanestris (Ach.) Gyelnik = Bryoria fuscescens (Velmala et al. 2014)
luteola Mont. = A. sarmentosa
minuscule (Nyl. ex Arnold) Degel. = Pseudephebe minuscule
nadvornikiana Gyelnik = Bryoria nadvornikiana
nana Motyka = a nomen nudum = Bryoria simplicior
nidulifera Norrlin = Bryoria furcellata
nigricans (Ach.) Nyl. = Gowardia nigricans
nitidula (Th. Fr.) Vainio = Bryoria nitidula
norstictica Motyka = a nomen nudum = Bryoria pseudofuscescens
oregana Tuck. = Nodobryoria oregana
positiva (Gyelnik) Motyka = Bryoria fuscescens
pseudofuscescens Gyelnik = Bryoria pseudofuscescens
pubescens (L.) R. Howe = Pseudephebe pubescens
sarmentosa subsp. vexillifera (Nyl.) D. Hawksw. = A. vexillifera (McMullin et al. 2016)
setacea (Ach.) Motyka = Bryoria pikei for North American records
simplicior (Vainio) Lynge = Bryoria simplicior
stigmata Bystrek = A. sarmentosa
subcana (Nyl. ex Stizenb.) Gyelnik = Bryoria fuscescens (Velmala et al. 2014)
subdivergens E. Dahl = Nodobryoria subdivergens
subsarmentosa Stirton = A. sarmentosa
subtilis Motyka = a nomen nudum = Bryoria pseudofuscescens
tenerrima Motyka = Bryoria fremontii
tenuis E. Dahl = Bryoria tenuis
thrausta Ach. = Ramalina thrausta

tortuosa G. Merr. = Bryoria fremontii
virens auct. = Bryoria fremontii for North American records

ALLANTOPARMELIA (Vainio) Essl.

almquistii (Vainio) Essl. Syn.: Parmelia almquistii
alpicola (Th. Fr.) Essl. Syn.: Parmelia alpicola
sibirica (Zahlbr.) Essl. (Spribille et al. 2009a)

ALLARTHONIA (Nyl.) Zahlbr.

caesia Flotow = Chrysothrix caesia

ALLOCETRARIA Kurokawa & Lai

madreporiformis (Ach.) Kärnefelt & A. Thell Syns.: Dactylina madreporiformis, Dufourea madreporiformis (Kärnefelt & Thell 1996)
stracheyi (Bab.) Kurok. & M. J. Lai (Thell et al. 2009)
cucullata (Bellardi) Randlane & Saag = Flavocetraria cucullata
nivalis (L.) Randlane & Saag = Flavocetraria nivalis
oakesiana (Tuck.) Randlane & A. Thell = Usnocetraria oakesiana

ALYXORIA Ach. (Ertz & Tehler 2011)

bicolor (R. C. Harris & Lendemer) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha bicolor
mougeotii (A. Massal.) Ertz, Frisch & G. Thor Syn.: Opegrapha mugeotii (Frisch et al. 2014)
ochrocheila (Nyl.) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha ochrocheila
varia (Pers.) Ertz & Tehler (Ertz & Tehler 2011) Syns.: Opegrapha diaphora, O. varia

AMANDINEA M. Choisy ex Scheid. & H. Mayrhofer

***adjuncta** (Th. Fr.) Hafellner Syn.: Buellia adjuncta (Hafellner 2004b)
cacuminum (Th. Fr.) H. Mayrhofer & Sheard Syn.: Rinodina cacuminum (Mayrhofer & Sheard 2002)
coniops (Wahlenb.) M. Choisy ex Scheid. & H. Mayrhofer Syn.: Buellia coniops
dakotensis (H. Magn.) P. May & Sheard Syns.: Rinodina dakotensis, R. finkii, R. inaequalis, R. pennsylvanica, R. pyriniformis, R. subplumbea, R. subpyriniformis. (Sheard & May 1997)
efflorescens (Müll. Arg.) Marbach (Marbach 2000)
endachroa (Malme) Marbach (Lücking et al. 2011bb)
langloisii Imshaug ex Marbach (Marbach 2000) Syn.: Buellia langloisii
leucomela (Imshaug) P. May & Sheard Syns.: Buellia leucoemela (Sheard & May 1997)
lignicola Tønsberg & Nordin (Tønsberg et al. 2012)
milliaria (Tuck.) P. May & Sheard Syn.: Rinodina milliaria (Sheard & May 1997)
polyspora (Willey) E. Lay & P. May Syn.: Buellia polyspora, Buellia punctata var. polyspora (Sheard & May 1997)
punctata (Hoffm.) Coppins & Scheid. Syn.: Buellia punctata, B. myriocarpa
subduplicata (Vainio) Marbach (Marbach 2000)
submontana Marbach (Marbach 2000)
insperata (Nyl.) H. Mayrhofer & Sheard (Lendemer et al. 2008c) = Orcularia insperata (Kalb & Giralt 2012)
placodiomorpha (Vainio) Marbach (Marbach 2000) = Orcularia placodiomorpha (Kalb & Giralt 2012)
turgescens (Nyl.) Marbach (Marbach 2000) = Buellia badia (Bungartz & Nash 2004c)

AMELIELLA Fryday & Coppins (Fryday & Coppins 2008)

andreaeicola Fryday & Coppins

AMEROCONIUM U. Braun & Zhurb.

***cladoniae** U. Braun & Zhurb. (Zhurbenko & Braun 2013)

AMPHILOMA Nyl.

lanuginosum (Hoffm.) Nyl. = Lepraria membranaceum

AMPLIOTREMA Kalb ex Kalb

auratum (Tuck.) Kalb ex Kalb (Seavey et al. 2014)

AMYGDALARIA Norman

consentiens (Nyl.) Hertel, Brodo & Mas. Inoue

continua Brodo & Hertel

elegantior (H. Magn.) Hertel & Brodo Syns.: *Huilia elegantior*, *Lecidea elegantior*

haidensis Brodo & Hertel

panaeola (Ach.) Hertel & Brodo Syns.: *Lecidea panaeola*, *Huilia panaeola*

pelobotryon (Wahlenb.) Norman Syns.: *Lecanora pelobotrya*, *Aspicilia pelobotrya*, *Lecidea pelobotrya*, L. "pelobotrion"

subdissentiens (Nyl.) Mas. Inoue & Brodo

ANAMYLOPSORA Timdal

pulcherrima (Vainio) Timdal Syns.: *Lecidea pulcherrima*, *Psora pulcherrima*

ANAPTYCHIA Körber

bryorum Poelt

crinalis (Schaerer) Vězda (Esslinger 2007)

elbursiana (Szatala) Poelt (Esslinger 2002a) Syn.: *Physconia thomsonii*

palmulata (Michaux) Vainio

ulothricoides (Vainio) Vainio

appalachensis Kurok. = *Heterodermia appalachensis*

aquila (Ach.) A. Massal. North American records = *A. palmulata*

boryi (Feé) A. Massal. = *Heterodermia boryi*

casarettiana A. Massal. = *Heterodermia casarettiana*

chondroidea (W. A. Weber & D. D. Awasthi) Kurok. = *Heterodermia chondroidea*

ciliaris (L.) Körber = misidentification for North America

comosa (Eschw.) A. Massal. North American records = *Heterodermia galactophylla*

corallophora (Taylor) Lynge = *Heterodermia crocea* (for North American records)

dendritica (Pers.) Vainio = *Heterodermia dendritica*

diademata (Taylor) Kurok. = *Heterodermia diademata*

domingensis (Ach.) A. Massal. = *Heterodermia albicans*

echinata (Taylor) Kurok. = *Heterodermia echinata*

erinacea (Ach.) Trevisan = *Heterodermia erinacea*

galactophylla (Tuck.) Trevisan = *Heterodermia galactophylla*

granulifera (Ach.) A. Massal. = *Heterodermia granulifera*

heterochroa Vainio = *Heterodermia obscurata*

hypoleuca (Muhl.) A. Massal. = *Heterodermia hypoleuca*

hypoleuca (Muhl.) A. Massal. var. *colorata* Zahlbr. = *Heterodermia obscurata*

isidiza Kurok. (Yoshimura & Sharp 1973) = *A. isidiata* Tomin, but a misidentification for North America (Esslinger 2007)

kaspica Gyelnik = *A. setifera*, but North American reports are *A. crinalis*

leucomela (L.) A. Massal. = *Heterodermia leucomela*

"*leucomelaena*" auct. = *Heterodermia leucomela*

major (Nyl.) Vainio = misidentification for North America

neoleucomelaena Kurok. = *Heterodermia boryi*

obscurata (Nyl.) Vainio = *Heterodermia obscurata*

"*palmatula*" auct. = *A. palmulata*

pseudospeciosa Kurok. = *Heterodermia pseudospeciosa*

pseudospeciosa Kurok. var. *tremulans* (Müll. Arg.) Kurok. = *Heterodermia speciosa*

ravenelii (Tuck.) Zahlbr. = *Heterodermia albicans*

setifera Räsänen North American reports are *A. crinalis*

sorediifera (Müll. Arg.) Du Rietz & Lynge = *Heterodermia obscurata*

speciosa (Wulfen) A. Massal. = *Heterodermia speciosa*

squamulosa Degel. = *Heterodermia squamulosa*

stippaea (Ach.) Nadv. = *A. bryorum*
tropica Kurok. = *Heterodermia tropica*
wrightii (Tuck.) Zahlbr. North American report (Tuckerman 1882) is *Heterodermia diademata*
(Esslinger & Tucker 2009)

ANDREIOMYCES Hodkinson & Lendemer (Hodkinson & Lendemer 2013)
morozeianus (Lendemer) Hodkinson & Lendemer Syn.: *Lepraria morozeianus*

ANEMA Nyl. ex Forssell
progidulum (Nyl.) Henssen (Schultz 2002a)
dodgei Herre = *Heppia despreauxii* (Schultz 2007b)
jenisejensis H. Magn. = misidentification for North America

ANISOMERIDIUM (Müll. Arg.) M. Choisy
albisedum (Nyl.) R. C. Harris Syn.: *Ditremis albiseda*
ambiguum (Zahlbr.) R. C. Harris Syn.: *Arthopyrenia ambigua*, *Ditremis ambigua*
anisolobum (Müll. Arg.) Aptroot Syn.: *Arthopyrenia anisoloba*, *Ditremis anisoloba*
aureopunctatum R. C. Harris Syn.: *Ditremis macrospora* R. C. Harris non Makhija & Patwardhan
(Harris 1995a)
biforme (Borrer) R. C. Harris Syn.: *Arthopyrenia biformis*, *A. parvula*, *A. conformis* auct. N. Am.,
Ditremis biformis, *Trimmatothela umbellulariae*
biformoides R. C. Harris (Harris 1995a)
carinthiacum (J. Steiner) R. C. Harris Syn.: *Arthopyrenia carinthiaca*, *A. dimidiata*, *Ditremis*
carinthiaca
distans (Willey) R. C. Harris Syn.: *Arthopyrenia distans*, *Ditremis distans*
excaecariae (Müll. Arg.) R. C. Harris Syn.: *A. sanfordense*, *Arthopyrenia sanfordensis*, *Ditremis*
sanfordensis (Harris 1995a)
finkii (R. C. Harris) R. C. Harris Syn.: *Ditremis finkii* (Harris 1995a)
griffinii R. C. Harris (Harris 1995a)
leucochlorum (Müll. Arg.) R. C. Harris Syn.: *Arthopyrenia leucochlora*, *Ditremis leucochlora*
[***Ditremis macrospora*** R. C. Harris]
phaeospermum R. C. Harris (Harris 1995a)
polypori (Ellis & Everh.) M. E. Barr Syn.: *Ditremis nyssigena*, *Arthopyrenia willeyana* (Barr et al.
1996)
quadricoccum R. C. Harris (Harris 1995a, Aptroot 1997)
quaternarium (R. C. Harris) R. C. Harris Syn.: *Ditremis quaternaria* (Harris 1995a)
subnexum (Nyl.) R. C. Harris (Lücking et al. 2011b)
subprostans (Nyl.) R. C. Harris Syn.: *Arthopyrenia subprostans*, *Ditremis subprostans*, *Pyrenula*
subprostans.
tamarindi (Fée) R. C. Harris Syn.: *Ditremis tamarindi*.
terminatum (Nyl.) R. C. Harris Syn.: *Ditremis terminata*, *Pleurotrema anacardii*, *Arthopyrenia*
anacardii (Harris 1995a)
tuckerae R. C. Harris Syn.: *Ditremis tuckerae*.
feeanum (Müll. Arg.) R. C. Harris = *A. anisolobum*
juistense (Erichsen) R. C. Harris = *A. polypori*
nyssigenum (Ellis & Everh.) R. C. Harris = *A. polypori*
sanfordense (Zahlbr.) R. C. Harris = *Anisomeridium excaecariae*

ANOMALOBARIA B. Moncada & Lücking (Moncada et al. 2013) = **LOBARIA** (McCune et al. 2014b;
Miadlikowska et al. 2014a)
anomala (Brodo & Ahti) B. Moncada & Lücking = *Lobaria anomala* (McCune et al. 2014b)
anthraspis (Ach.) B. Moncada & Lücking = *Lobaria anthraspis* (McCune et al. 2014b)

ANOMOMORPHA Nyl.
turbulenta (Nyl.) Hue Syn.: *Graphis turbulenta* (Staiger 2002)

ANTHRACOTHECIUM Hampe ex A. Massal.

- australiensis** (Müll. Arg.) Aptroot (Aptroot 2012)
- pachycheilum** (Tuck.) Zahlbr. Syn.: *Pyrenula pachycheila* (Tuckerman 1872)
- prasinum** (Eschw.) R. C. Harris
- staurosporum** (Tuck. ex Willey) Zahlbr.
- canellae-albae* (Fée) Müll. Arg. = *Sulcopyrenula canellae-albae*
- corticatum* Müll. Arg. = *Pyrenula confinis*
- falsarium* Zahlbr. = *Pyrenula schiffneri*
- leucostomum* (Ach.) Malme = *Pyrenula leucostoma*
- libricola* (Fée) Müll. Arg. = probable misidentification for North American
- maculare* Zahlbr. = *Pyrenula breutelii*
- mucosum* (Vainio) Zahlbr. = probable misidentification for North American
- nanum* (Zahlbr.) R. C. Harris = *A. australiensis*
- ochraceoflavens* (Nyl.) Zahlbr. = *Pyrenula ochraceoflavens*
- ochraceoflavum* (Nyl.) Müll. Arg. = *Pyrenula ochraceoflava*
- pauciloculare* Herre = identity uncertain
- pyrenuloides* (Mont.) Müll. Arg. = *Pyrenula pyrenuloides*
- subglobosum* Riddle = *Sulcopyrenula subglobosa*
- thelomorphum* (Tuck.) Zahlbr. = *Pyrenula thelomorpha*
- varians* R. C. Harris = *Pyrenula novemseptata*

ANZIA Stizenb.

- americana** Yoshim. & Sharp
- colpodes** (Ach.) Stizenb. Syn.: *Parmelia colpodes*
- ornata** (Zahlbr.) Asahina

ANZINA Scheid.

- carneonivea** (Anzi) Scheid. (Goward et al. 1996)
- carneonivea** var. **tetraspora** Scheid. (Spribille et al. 2010)

APATOPLACA Poelt & Hafellner = **CALOPLACA**

- oblongula* (H. Magn.) Poelt & Hafellner = *Caloplaca oblongula*

ARCTOCETRARIA Kärnefelt & A. Thell

- andrejevii** (Oxner) Kärnefelt & A. Thell Syn.: *Cetraria andrejevii*, *C. simmonsii*
- nigricascens** (Nyl.) Kärnefelt & A. Thell Syn.: *Cetraria nigricascens*, *C. elenkinii*, *C. sibirica*

ARCTOMIA Th. Fr.

- delicatula** Th. Fr.
- interfixa** (Nyl.) Vainio

ARCTOPARMELIA Hale

- centrifuga** (L.) Hale Syns.: *Parmelia centrifuga*, *P. aleuritica*, *Parmelia halseyana*, *Xanthoparmelia centrifuga*
- incurva** (Pers.) Hale Syns.: *Parmelia incurva*, *Xanthoparmelia incurva*
- separata** (Th. Fr.) Hale Syns.: *Parmelia separata*, *P. birulae* var. *grumosa*, *Xanthoparmelia separata*
- subcentrifuga** (Oxner) Hale Syns.: *Parmelia subcentrifuga*, *Xanthoparmelia subcentrifuga*
- aleuritica* (Nyl.) Hale = *A. centrifuga*

ARCTOPELTIS Poelt

- thuleana** Poelt

ARRHENIA Fr.

- ***peltigerina** (Peck) Redhead, Lutzoni, Moncalvo & Vilgalys Syn.: *Omphalina peltigerina* (Redhead et al. 2002)

ARTHONIA Ach.

albofuscens Tuck.

⁺**albopulverea** Nyl. (Grube 2007)

albovirescens Nyl. Syn.: *Arthothelium albovirescens*

aleuromela Nyl.

^{*}**almquistii** Vainio (Zhurbenko 2013)

anglica Coppins (Hodkinson et al. 2009, Lendemer et al. 2009c)

^{*}**anjutii** S. Y. Kondr. & Alstrup (Kondratyuk 1996)

antillarum (Fée) Nyl. (Lücking et al. 2011b)

apatetica (A. Massal.) Th. Fr.

arthonioides (Ach.) A. L. Sm.

asteriscus Müll. Arg.

atomaria (Lynge) R. Kilius

atra (Pers.) A. Schneider (Ertz et al. 2009) Syn.: *Opegrapha atra*

atrata (Fée) Müll. Arg.

⁺**beccariana** (Bagl.) Stizenb. (Grube 2007)

^{*}**biatoricola** Ihlen & Owe-Larsson (Ihlen et al. 2004b)

calcareo (Turner ex Sm.) Ertz & Diederich (Ertz et al. 2009) Syn. : *Opegrapha calcarea*

caribea (Ach.) A. Massal.

⁺**caudata** Willey

^{*}**ceracea** Etayo & Breuss (Etayo & Breuss 1998)

cinereopruinosa Schaerer

cinnabarina (DC.) Wallr.

^{*}**circinata** Th. Fr. (Villella & Sheehy 2015)

^{*}**clemens** (Tul.) Th. Fr.

^{*}**colombiana** Etayo (Lendemer & Harris 2012)

compensata Nyl. (Hansen & Dute 2005)

compensatula Nyl. (Seavey & Seavey 2012)

complanata Fée

conferta (Fée) Nyl.

^{*}**coronata** Etayo (Lendemer & Harris 2012)

cupressina Tuck.

cyrtodes Nyl. (Lendemer et al. 2009c)

⁺**cytisi** A. Massal.

didyma Körber

diffusa Nyl.

diffusella Fink

^{*}**digitatae** Hafellner (Knudsen & Lendemer 2007)

^{*}**diploiciae** Calat. & Diederich (Grube 2007, Lendemer et al. 2009b)

dispersa (Schrader) Nyl.

dispersula Nyl.

eckfeldtii Müll. Arg.

^{*}**epicladonia** (Nyl.) Alstrup & Zhurb. (Zhurbenko & Alstrup 2004)

^{*}**epimela** (Almq.) I. M. Lamb (Goward et al. 1996)

^{*}**epiphyscia** Nyl.

erubescens Willey

erupta Nyl.

excedens Nyl.

^{*}**excentrica** Th. Fr. (Hafellner et al. 2002)

exilis (Flörke) Anzi

^{*}**farinacea** (H. Olivier) R. Sant. (Diederich 2003)

fissurinea Nyl.

floridana Willey

fuliginosa (Schaerer) Flotow

^{*}**fuscopurpurea** (Tul.) R. Sant. (Alstrup & Cole 1998)

^{*}**gelidae** R. Sant. (Spribille et al. 2010)

gerhardii Egea & Torrente (Grube 2007)
⁺**glaucella** Nyl. (Grube 2007)
glebosa Tuck.
granosa B. de Lesd.
gyalectoides Müll. Arg.
hamamelidis Nyl.
helvola (Nyl.) Nyl. (Harris 1977)
hypobela (Nyl.) Zahlbr.
ilicina Taylor Syn.: *Arthothelium ilicinum*
impallens Nyl.
incarnata Th. Fr. ex Almq.
infectans Egea & Torrente (Egea & Torrente 1995)
intervenians Nyl. Syn.: *Arthothelium intervenians* (Lücking et al. 2011b)
^{*}**intexta** Almq.
kermesina R. C. Harris, E. Tripp & Lendemer (Lendemer et al. 2013)
lapidicola (Taylor) Branth & Rostrup
lecanactidea Zahlbr.
^{*}**lecanorina** (Almq.) Grube (Grube 2007)
^{*}**lethariicola** Alstrup & M. S. Cole (Alstrup & Cole 1998)
leucastraea Tuck.
leucopellaea (Ach.) Almq.
ligniariella Coppins (Spribille & Björk 2008)
^{*}**linitae** R. Sant. (Esslinger & Egan 1995)
luridoalba Nyl.
macounii G. Merr. (Kocourková et al. 2008) Syn.: *Arthothelium macounii*
macrotheca Fée (Lücking et al. 2011b) Syn.: *Arthothelium macrothecum*
madreana Egea & Torrente (Egea & Torrente 1995)
mediella Nyl.
mesoleuca Nyl. (Lücking et al. 2011b)
microspERMella Willey
mirabilis Grube (Lücking et al. 2011b)
^{*}**molendoi** (Heufl. ex Frauenf.) R. Sant. (Alstrup & Cole 1998; Hafellner et al. 2002)
neoni B. de Lesd.
^{*}**nephromaria** (Nyl.) Nyl. ex H. Olivier
ochrocincta Willey
ochrodiscodes Nyl.
ochrolutea Nyl.
ochrospila Nyl. (Seavey & Seavey 2012)
oxytera Nyl. (Fink 1935, Esslinger & Tucker 2009)
palmulacea (Müll. Arg.) R. Sant.
patellulata Nyl.
^{*}**peltigerea** Th. Fr. (Hafellner et al. 2002)
^{*}**peltigerina** (Almq.) H. Olivier
perminuta Willey
phaeobaea (Norman) Norman
^{*}**phaeophysciae** Grube & Matzer (Hafellner et al. 2002)
phlyctiformis Nyl. subsp. **californica** Grube (Grube 2007)
⁺**pinastri** Anzi
platygraphidea Nyl.
platyspilea Nyl.
polygramma Nyl.
polymorpha Ach.
^{*}**protoparmeliopseos** Etayo & Diederich (Kocourková & Knudsen 2015)
⁺**pruinascens** (Zahlbr.) Grube (Grube 2007) Syn.: *Arthothelium pruinascens*
pruinata (Pers.) Steud. ex A. L. Sm. (Grube 2007)
⁺**pruinoseella** Nyl. (Grube 2007)

pruinosa Nyl.
punctiformis Ach.
pyrrhuliza Nyl.
⁺**quintaria** Nyl.
radiata (Pers.) Ach.
ravenelii Tuck.
redingeri Grube (Grube 2007)
reniformis (Pers.) Ach.
⁺**rhoidis** Zahlbr. (Grube 2007)
rubella (Fée) Nyl.
rubrocincta G. Merr. ex Grube & Lendemer (Grube & Lendemer 2009)
rupicola Fink
⁺**sanguinea** Willey (Grube 2007) Syn.: *Arthothelium sanguineum*
septiseptella Nyl. (Fink 1935, Esslinger & Tucker 2009)
⁺**sexlocularis** Zahlbr. (Grube 2007)
siderea Degel.
simplicascens Nyl. (Lücking et al. 2011b)
spadicea Leighton
speciosa (Müll. Arg.) Grube (Grube 2007)
stellaris Kremp.
^{*}**stereocaulina** (Ohlert) R. Sant. (Zhurbenko 2010)
subastroidella Nyl.
subdiffusa Willey
subdispuncta Nyl.
^{*}**subfuscicola** (Lindsay) Triebel
subminutissima Nyl.
subminutula Nyl.
subrubella Nyl.
susa R. C. Harris & Lendemer Syn.: *Arthothelium taediosum* auct. N.A. (Lendemer et al. 2013)
taedescens Nyl.
terrigena Nyl.
⁺**tetramera** (Stizenb.) Hasse (Grube 2007)
torulosa Fée
tuckermaniana Willey
varia (Ach.) Nyl.
^{*}**varians** (Davies) Nyl. Syn.: *Celidium varians* (Hawksworth 2003)
vernans Willey
vinosa Leighton
viridicans Willey
^{*}**xanthoparmeliarum** Etayo (Kocourková 2009)
xylographica Nyl.
alba Müll. Arg. = *a Stirtonia* sp.
aspera Leighton = *A. arthonioides*
atractospora Zahlbr. = *Naetrocymbe atractospora*
biseptata Degel. = *Mycoporum biseptatum* (Lendemer & Harris 2014c)
byssacea (Weigel) Almq. = *Inoderma byssaceum* (Weigel) Gray (Frisch et al. 2015)
caesia (Flotow) Körber = *Chrysothrix caesia*
carneorufa Willey = *Catillaria erysiboides*
chiodectella Nyl. = *A. pruinata* (Grube 2007)
convexella Nyl. = a non-lichenized fungus (*Mycoporum* sp.?)
epipastoides auct. N.A. non Nyl. = *A. glaucella* (Grube 2007)
fusca (A. Massal.) Hepp = *A. lapidicola*
galactitella Nyl. = *A. glaucella* (Grube 2007)
glaucescens Nyl. = *Schismatomma glaucescens*
glaucumaria (Nyl.) Nyl. = *A. varians* (Hawksworth 2003)
gregaria (Weigel) Körber = *A. cinnabarina*

gregarina Willey = Coniarthonia gregarina
 impolita (Hoffm.) Borrer = A. pruinata
 lecideella Nyl. ex Willey = Chrysothrix caesia (Lendemer 2008)
 leucodontis (Poelt & Döbb.) Coppins = Bryostigma muscigena
 lurida Ach. nom. rej. = A. spadicea
 melaspora Tuck. = Sporostigma melaspora (Grube 2001)
 montagnei (Tuck.) R. C. Harris = uncertain species of Cryptothecia? (Lücking et al. 2011b)
 muscigena Th. Fr. = Bryostigma muscigena
 pyrrhula Nyl. = Coniarthonia pyrrhula
 spectabilis Flotow = Arthothelium spectabile
⁺stictella Stizenb. = A. albopulverea (Grube 2007)
 taediosa Nyl. North American reports are Arthonia susa (Lendemer et al. 2013)
 tremelloides Etayo Erroneously listed here; reported only from Mexico (Grube 2007)
 tumidula (Ach.) Ach. = A. cinnabarina
 verrucosa Egea & Torrente Erroneously listed here; reported only from Mexico (Grube 2007)
 willeyi Tuck. = A. diffusa (Lendemer 2004a)

ARTHOPHACOPSIS Hafellner

***parmeliarum** Hafellner (Diederich 2003, Zhurbenko & Laursen 2003)

ARTHOPYRENIA A. Massal.

⁺**analepta** (Ach.) A. Massal. (Harris 1995a, Aptroot 2002a) Syn.: Polyblastiopsis fallax
betulicola R. C. Harris, E. Tripp & Lendemer (Harris et al. 2014)
cerasi (Schrader) A. Massal.
cinchonae (Ach.) Müll. Arg. Syn.: Pyrenula cinchonae (Ach.) Tuck. non Fée
cinereopruinosa (Schaerer) A. Massal.
confluens R. C. Harris (Harris 1995a)
degelii R. C. Harris (Harris 1995a)
esenbeckiana (Fée) R. C. Harris (Harris 1995a)
exasperata R. C. Harris (Harris 1995a)
lyrata R. C. Harris
majuscula (Nyl.) Zahlbr.
malaccitula (Nyl.) Zahlbr.
minor R. C. Harris
oblongens R. C. Harris (Harris 1995a)
planorbis (Ach.) Müll. Arg.
⁺**plumbaria** (Stizenb. ex Hasse) R. C. Harris Syn.: Porina plumbaria, Pyrenula herrei
rappii Zahlbr.
⁺**subcerasi** (Vainio) Zahlbr. (Spribille et al. 2010)
taxodii R. C. Harris (Harris 1995a)
***texensis** (Cooke) D. Hawksw.
 affinis (A. Massal.) R. C. Harris = Strigula affinis North American records are S. jamesii
 alba (Schrader) Zahlbr. = Acrocordia gemmata
 ambigua Zahlbr. = Anisomeridium ambiguum
 anacardii Vainio = Anisomeridium terminatum
 analeptella (Nyl.) Arnold = misidentification for North America
 anisoloba Müll. Arg. = Anisomeridium anisoloba
 antecellens (Nyl.) Arnold = Mycoporum antecellens
 atomarioides Müll. Arg. = Naetrocymbe atomarioides
 atractospora Zahlbr. = Naetrocymbe atractospora
 bifera Zahlbr. = A. malaccitula
 biformis (Borrer) A. Massal. = Anisomeridium biforme
 bryospila (Nyl.) Arnold = Collemopsidium bryospilum
 carinthiaca J. Steiner = Anisomeridium carinthiacum
 cavata (Ach.) R. C. Harris = Acrocordia cavata
 conformis (Nyl.) Müll. Arg. = misidentification for North America, mostly Anisomeridium biforme

conoidea (Fr.) Zahlbr. = *Acrocordia conoidea*
 dimidiata Fink = *Anisomeridium carinthiacum*
 distans (Willey) Zahlbr. = *Anisomeridium distans*
 epidermidis (DC.) A. Massal. = *Naetrocymbe punctiformis*
 faginea (Schaerer) Swinscow = *Strigula stigmatella*
 fallax (Nyl.) Arnold = *A. analepta*
 finkii Zahlbr. = *Acrocordia megalospora*
 floridana Zahlbr. = *Naetrocymbe atomarioides*
 fraxini A. Massal. = *Naetrocymbe fraxini*
 gemmata (Ach.) A. Massal. = *Acrocordia gemmata*
 halodytes (Nyl.) Arnold = *Collemopsidium halodytes*
 hyalospora (Nyl.) Fink = *Lithothelium hyalosporum*
 lapponina Anzi = *A. analepta*
 leucochlora Müll. Arg. = *Anisomeridium leucochlorum*
 litoralis (Leighton) Arnold (Fink 1935) = *Collemopsidium sublitorale* (Santesson et al. 2004)
 macrocarpa (Körber) Zahlbr. = misidentification for North America
 macrospora Fink = *Acrocordia megalospora*
 megalospora Lonnr. = *Naetrocymbe megalospora*
 mycoporoides Müll. Arg. = *Mycoporum mycoporoides*
 padi Rabenh. = *Naetrocymbe punctiformis*
 parvula Zahlbr. = *Anisomeridium biforme*
 pinicola (Hepp) A. Massal. = *A. cinereopruinosa*
 prosperella (Nyl.) Zahlbr. = *Pyrenocollema prosperella*
 punctiformis (Pers.) A. Massal. = *Naetrocymbe punctiformis*
 quinqueseptata (Nyl.) Müll. Arg. = *Polymeridium quinqueseptatum*
 rhypona (Ach.) A. Massal. (Aptroot 2002a) = *Naetrocymbe rhypona*
 salicis A. Massal. = Identity uncertain (Harris 1995a)
 sanfordensis Zahlbr. = *Anisomeridium excaecariae*
 sphaeroides (Wallr.) Zahlbr. = *Acrocordia gemmata*
 sublitoralis (Leighton) Arnold = *Collemopsidium sublitoralis*
 submuriformis R. C. Harris = *Strigula submuriformis*
 subprostans (Nyl.) Müll. Arg. = *Anisomeridium subprostans*
 subpunctiformis Nyl. = *A. atomarioides*
 tenuis R. C. Harris = *Strigula americana*
 tichothecioides Arnold = *Pyrenocollema tichothecioides*
 willeyana R. C. Harris = *Anisomeridium polypori*

ARTHOTHELIOPSIS Vainio

floridensis Lücking & W. R. Buck (Lücking et al. 2007)
planicarpa (Lücking) Lücking, Sérus. & Vězda (Lücking et al. 2007) A tentative report.

ARTHOTHELIUM A. Massal.

abnorme (Ach.) Müll. Arg.
adveniense Nyl.
anastomosans (Ach.) Arnold
distendens (Nyl.) Müll. Arg.
hallii (Tuck.) Zahlbr.
lichenale (Peck) M. E. Barr (Barr et al. 1986)
norvegicum Coppins & Tønsberg (Tønsberg & Williams 2006)
orbilliferum (Almq.) Hasse
ruanum (A. Massal.) Körber
spectabile (Flotow) A. Massal. Syn.: *Arthonia spectabilis*
subcyrtodes (Willey) Hasse
violascens (Nyl.) Zahlbr.
 albovirescens (Nyl.) Fink = *Arthonia albovirescens*
 gregarinum (Willey) Zahlbr. = *Coniarthonia gregarina*

ilicinum (Taylor) P. James = Arthonia ilicina
 interveniens (Nyl.) Zahlbr. = Arthonia interveniens
 macounii (G. Merr.) W. Noble = Arthonia macounii
 macrothecum (Fée) A. Massal. = Arthonia macrothecum
 +pruinascens Zahlbr. = Arthonia pruinascens (Grube 2007)
 ruanideum (Nyl.) Arnold = A. ruanum
 +sanguineum (Willey) Zahlbr. = Arthonia sanguinea (Grube 2007)
 taediosum (Nyl.) Müll. Arg. North American reports are Arthonia susa (Lendemer et al. 2013)

ARTHRORHAPHIS Th. Fr.

***aeruginosa** R. Sant. & Tønsberg
alpina (Schaerer) R. Sant. Syn.: Bacidia alpina
citrinella (Ach.) Poelt Syn.: Bacidia citrinella, B. flavovirescens
 #**grisea** Th. Fr. Syn.: Lahmia fueistingii

ARTHROSPORUM A. Massal.

populorum A. Massal. Syns.: Bacidia populorum, B. acclinis, Bilimbia acclinis
 accline (Flotow) A. Massal. = A. populorum

ASAHINEA W. L. Culb. & C. F. Culb.

chrysantha (Tuck.) W. L. Culb. & C. F. Culb. Syn.: Cetraria chrysantha
scholanderi (Llano) W. L. Culb. & C. F. Culb. Syn.: Cetraria scholanderi

ASPICILIA A. Massal.

albomarginata B. de Lesd. Syn.: Lecanora albomarginata
 [Lecanora albopruinosa Looman]
alboradiata (H. Magn.) Oxner Syn.: Lecanora alboradiata
aliena (Zahlbr.) Oxner Syn.: Lecanora aliena
americana B. de Lesd. Syn.: Lecanora americana
anglica Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
annulata (Lynge) J. W. Thomson Syn.: Lecanora annulata
anseris (Lynge) J. W. Thomson Synonym: Lecanora anseris
aquatica Körber Syn.: Lecanora aquatica
arctica (Lynge) Oxner Syn.: Lecanora arctica
arizonica Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
aspera (Mereschk.) Tomin (McCune et al. 2014b)
aurantiaca Owe-Larsson & A. Nordin (Knudsen et al. 2008b)
berntii A. Nordin, Tibell & Owe-Larsson Syn.: Lecanora mastoidea (Nordin et al. 2008)
bicensis F. Anderson & Lendemer (Anderson & Lendemer 2016)
boykinii Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
brucei Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
caesiopruinosa (H. Magn.) J. W. Thomson Syn.: Lecanora caesiopruinosa
californica Rosentreter (Rosentreter 1998)
candida (Anzi) Hue Syn.: Lecanora candida
cinerea (L.) Körber Syn.: Lecanora cinerea
cingulata (Zahlbr.) Oxner Syn.: Lecanora cingulata
composita (Lynge) J. W. Thomson Syn.: Lecanora composita
concinna (J. W. Thomson) J. W. Thomson (Thomson 1997)
confusa Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
contigua (Lynge) J. W. Thomson
cuprea Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
curvabilis (Nyl.) Hue (Hansen 2006)
cyanescens Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
determinata (H. Magn.) N. S. Golubk. (Owe-Larsson et al. 2007)
disserpens (Zahlbr.) Räsänen Syn.: Lecanora disserpens
elevata (Lynge) J. W. Thomson Syn.: Lecanora elevata

filiformis Rosentreter (Rosentreter 1998)
fimbriata (H. Magn.) Clauzade & Rondon Syn.: *Lecanora fimbriata*
fumosa Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
glaucopsina (Nyl. ex Hasse) Hue (Knudsen 2005b, Owe-Larsson et al. 2007)
grisea Arnold (Fryday 2001)
heteroplaca (Zahlbr.) Oxner Syn.: *Lecanora heteroplaca*
humboldtii (Lynge) J. W. Thomson
intermutans (Nyl.) Arnold (McCune et al. 2014b)
karellica (H. Magn.) Oxner
knudsenii Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
laevata (Ach.) Arnold Syn.: *Lecanora laevata*
laxula (H. Magn.) Brodo
lesleyana Darb. Syn.: *Lecanora lesleyana*
limitata (H. Magn.) J. W. Thomson Syn.: *Lecanora limitata*
mansourii Sohrabi (McCune et al. 2014b)
mashiginensis (Zahlbr.) Oxner
mazarina (Wahlenb.) R. Sant.
narssaquensis (Lynge) J. W. Thomson Syn.: *Lecanora basaltica*, *L. narssaquensis*
nashii Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
nathorstii (Lynge) J. W. Thomson
nikrapensis Darb. Syn.: *Lecanora nikrapensis*
nordlandica (H. Magn.) Degel.
novae-semliae (Zahlbr.) Oxner Syn.: *Lecanora novae-semliae*
olivaceobrunnea Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
olivaceopallida (H. Magn.) Lendemer (Lendemer et al. 2013)
pacifica Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
peltastictoides (Hasse) K. Knudsen & Kocourk. (Knudsen & Kocourková 2013) Syn.: *Lecanora peltastictoides*
pergibbosa (H. Magn.) Räsänen Syn.: *Lecanora pergibbosa*
perradiata (Nyl.) Hue Syn.: *Lecanora perradiata*
pertusa (Lynge) J. W. Thomson Syn.: *Lecanora pertusa*
phaea Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
plicigera (Zahlbr.) Räsänen Syn.: *Lecanora plicigera*
polychroma Anzi Syn.: *Lecanora polychroma*
praecrenata (Nyl. ex Hasse) Hue Syn.: *Lecanora praecrenata* (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
reptans (Looman) Wetmore Syn.: *Lecanora reptans*:
rolleana Hue Syn.: *Lecanora rolleana*
rosulata Körber Syn.: *Lecanora rosulata*
ryrkaipiae (H. Magn.) Oxner Syn.: *Lecanora ryrkaipiae*
santamonicae Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)
sipeana (H. Magn.) Owe-Larsson & A. Nordin Syn.: *Lecanora sipeana* (Owe-Larsson et al. 2007)
sorediza (Lynge) J. W. Thomson
sublapponica (Zahlbr.) Oxner Syn.: *Lecanora sublapponica*
submersa (Lamy) Hue
subplicigera (H. Magn.) Oxner
subradians (Nyl.) Hue Syn.: *Lecanora stygioplaca*, *L. subradiascens*, *L. subradians*
substictica Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)
supertegens Arnold Syn.: *Lecanora supertegens*
tenuis (H. Magn.) Owe-Larsson & A. Nordin Syn.: *Lecanora tenuis* (Owe-Larsson et al. 2007)
verrucigera Hue Syn.: *Lecanora verrucigera*
 alphoplaca (Wahlenb.) Poelt & Leuckert = *Lobothallia alphoplaca*
 alpina (Sommerf.) Arnold = *Bellemerea alpina*
 bennettii (Lynge) J. W. Thomson = *A. mashiginensis*
 caesiocinerea (Nyl. ex Malbr.) Arnold = *Circinaria caesiocinerea*
 calcarea (L.) Körber = *Circinaria calcarea*

cinereorufescens (Ach.) A. Massal. = Bellemerea cinereorufescens
 contorta (Hoffm.) Kremp. = Circinaria contorta
 desertorum (Kremp.) Mereschk. North American reports are Circinaria arida (Owe-Larsson et al. 2011)
 diamarta (Ach.) Boistel = Bellemerea diamarta
 excavata G. Thor & Timdal = Acarospora moenium
 flavida (Hepp) Rehm = Eiglera flavida
 fruticulosa (Eversm.) Flagey = Circinaria rogeri for N.A. reports
 gibbosa (Ach.) Körber = Circinaria gibbosa
 hispida Mereschk. = Circinaria hispida
 lacustris (With.) Th. Fr. = Ionaspis lacustris
 leproscens (Sandst.) Hav. = Circinaria leproscens
 mastoidea (Lynge) J. W. Thomson = A. berntii (Nordin et al. 2008)
 mastrucata (Wahlenb.) Th. Fr. (Wetmore 1967) = Sagedia mastrucata
 melanaspis (Ach.) Poelt & Leuckert = Lobotheallia melanaspis
 melinodes Körber = Porpidia melinodes
 moenium (Vainio) G. Thor & Timdal = Acarospora moenium (Nordin et al. 2009)
 myrinii (Fr.) Stein = Aspilidea myrinii
 pelobotrya (Wahlenb.) Th. Fr. = Amygdalaria pelobotryon
 praeradiosa (Nyl.) Poelt & Leuckert = Lobotheallia praeradiosa
 quartzitica W. A. Weber = Schaereria fuscocinerea (Owe-Larsson et al. 2007)
 radiosa (Hoffm.) Poelt & Leuckert = Lobotheallia radiosa
 rogeri Sohrabi (Sohrabi et al. 2013b) = Circinaria rogeri
 sanguinea Kremp. = Bellemerea sanguinea
 simoënsis Räsänen (Owe-Larsson et al. 2007) = Sagedia simoënsis
 stygioplaca (Nyl.) Hue = A. subradians
 subradiascens (Nyl.) Hue = A. subradians
 subsorediza (Lynge) R. Sant. = Bellemerea subsorediza
 uxoris (Werner) V. J. Rico (Shrestha & St. Clair 2009) North American report = Teuvoa junipericola (Sohrabi et al. 2013a)

ASPIDOTHELIUM Vainio

cinerascens Vainio (Lücking et al. 2011b)
geminiparum (Malme) R. Sant. (Lücking et al. 2011b)
scutellarpum Lücking (Lücking et al. 2011b)
 fugiens (Müll. Arg.) R. Sant. = Thelenella fugiens

ASPILIDEA Hafellner (Hafellner & Türk 2001)

myrinii (Fr.) Hafellner

ASTEROPHOMA D. Hawksw.

***mazaediicola** D. Hawksw.

ASTEROTHYRIUM Müll. Arg.

decipiens (Rehm) R. Sant.
leucophthalmum (Müll. Arg.) R. Sant.
rotuliforme (Müll. Arg.) Sérus. Syns.: Gyalectidium rotuliforme, Lopadiopsis floridana

ASTROTHELIUM Eschw.

cinnamomeum (Eschw.) Müll. Arg.
confusum Müll. Arg.
diplocarpoides Müll. Arg. (Lücking et al. 2011b)
diplocarpum Nyl. (Harris 1995a)
galbineum Kremp.
variolosum (Ach.) Müll. Arg. Syn.: Trypethelium catervarium
versicolor Müll. Arg.
 conicum auct. = A. cinnamomeum

conicum Eschw. = (?) type not found
ochrothelizum Müll. Arg. = A. galbineum

ATHALLIA Arup, Frödén & Søchting (Arup et al. 2013)

cerinelloides (Erichsen) Arup, Frödén & Søchting Syn.: Caloplaca cerinelloides
holocarpa (Hoffm.) Arup, Frödén & Søchting Syn.: Caloplaca holocarpa
pyracea (Ach.) Arup, Frödén & Søchting Syn.: Caloplaca pyracea
saxifragarum (Poelt) Arup, Frödén & Søchting Syn.: Caloplaca saxifragarum
scopularis (Nyl.) Arup, Frödén & Søchting Syn.: Caloplaca scopularis
vitellinula (Nyl.) Arup, Frödén & Søchting Syn.: Caloplaca vitellinula

ATHELIA Pers.

***arachnoidea** (Berk.) Jülich (Haffelner et al. 2002)
+**epiphylla** Pers.
poeltii Jülich

ATLA Savić & Tibell

alaskana S. Tibell & Tibell (Tibell & Tibell 2015)

AULAXINA Fée

microphana (Vainio) R. Sant.
quadrangula (Stirton) R. Sant.

BACHMANNIOMYCES D. Hawksw.

***uncialicola** (Zopf) D. Hawksw.

BACIDIA De Not.

absistens (Nyl.) Arnold
aggregatula Malme
arceutina (Ach.) Arnold
[**Bilimbia artyta** (Ach.) Fink]
auerswaldii (Hepp ex Stizenb.) Mig.
augustinii (Tuck.) Zahlbr. = misplaced here, correct placement uncertain (Ekman 1996)
bagliettoana (A. Massal. & De Not.) Jatta
biatorina (Körber) Vainio
brouardii (B. de Lesd.) Zahlbr.
campalea (Tuck.) S. Ekman & Kalb
circumspecta (Nyl. ex Vainio) Malme
coprodes (Körber) Lettau (Llop & Ekman 2004) Syn.: Bilimbia trachona auct.
coruscans S. Ekman (Ekman 2004a)
diffracta S. Ekman
ekmaniana R. C. Harris, Lendemer & Ladd (Lendemer et al. 2016b)
flavens (Willey) Zahlbr. = a species of Lecania (Ekman 1996)
friesiana (Hepp) Körber
granosa (Tuck.) Zahlbr. Syn.: Bilimbia granosa, Bilimbia pammellii (Ekman 2014)
hegetschweileri (Hepp) Vainio
helicospora S. Ekman
herbarum (Stizenb.) Arnold
heterochroa (Müll. Arg.) Zahlbr.
hostheleoides (Nyl.) Zahlbr. Syn.: Bilimbia accelinis
idahoensis H. Magn. (McCune et al. 2014b)
igniarii (Nyl.) Oxner
illudens (Nyl.) Lynge
insularis Zahlbr.
ioessa Herre = misplaced here, correct placement uncertain (Ekman 1996)
jacobi (Tuck.) Hasse = misplaced here, correct placement uncertain (Ekman 1996, 2004a)

kekesiana R. C. Harris (Harris 2009)
kingmanii Hasse = misplaced here, correct placement uncertain (Ekman 1996)
laurocerasi (Delise ex Duby) Zahlbr.
lobarica Printzen & Tønsberg (Printzen & Tønsberg 2007)
medialis (Tuck. ex Nyl.) B. de Lesd. (Ekman 1996) Syns.: *Biatora molybditis*, *Bilimbia molybditis*, *Lecidea medialis* (Ekman 1996)
mutabilis Malme
***peltigericola** Vainio (Weber & Wittman 2000)
phyllopsoropsis R. C. Harris & Lendemer (Harris & Lendemer 2006)
polychroa (Th. Fr.) Körber Syn.: *Biatora fuscorubella*
purpurans R. C. Harris, Lendemer & Ladd (Lendemer et al. 2016b)
ravenelii (Tuck.) Zahlbr. Syn.: *Bilimbia ravenelii* Correct placement uncertain (Ekman 1996)
reagens Malme
rosellizans S. Ekman (Ekman 2009)
rubella (Hoffm.) A. Massal.
rubidofusca (Willey) Zahlbr. Syn.: *Bilimbia rubidofusca* Possibly a species of *Gyalidea* (Printzen 1995)
russeola (Kremp.) Zahlbr.
salmonea S. Ekman
saxicola Looman = misplaced, correct placement uncertain (Ekman 1996)
schweinitzii (Fr. ex Tuck.) A. Schneider Syn.: *Biatora leucampyx* (Lendemer & Harris 2012)
scopulicola (Nyl.) A. L. Sm.
sorediata Lendemer & R. C. Harris (Lendemer et al. 2016b)
subgranulosa (Tuck.) Riddle Erroneously listed as a synonym of *Phyllopsora canoumbrina* in the checklist; possibly belongs to *Psorella* (Ekman 1996)
subincompta (Nyl.) Arnold
suffusa (Fr.) A. Schneider Syn.: *Biatora suffusa*
veneta S. Ekman (Ekman 2004a)
vermifera (Nyl.) Th. Fr. (Ekman 1996)
viridifarinosa Coppins & P. James (Tønsberg 1997)
abbrevians (Nyl.) Th. Fr. = *B. igniarii*
abductans (Nyl.) Zahlbr. = *B. schweinitzii*
accedens (Arnold) Lettau = *Bilimbia accedens*
accedens sensu Harris = unnamed species (Ekman 1996)
acclinis (Flotow) Zahlbr. = *Arthrosporum populorum*
affinis (Stizenb.) Vainio = *B. subincompta*
akompsa (Tuck.) Fink = a *Lecanactis* sp.
alaskensis (Nyl.) Zahlbr. = *Herteliana alaskensis*
albescens (Kremp.) Zwackh = *Bacidina phacodes*, but a misidentification for N.A. (Ekman 1996)
alpina (Schaerer) Vainio = *Arthrorhaphis alpina*
apiahica (Müll. Arg.) Zahlbr. = *Bacidina apiahica*
arnoldiana Körber = *Bacidina arnoldiana*
arthoniza (Nyl.) Zahlbr. = *Lecidella stigmatea*
assulata (Körber) Vězda = *Bacidina assulata*
atrogrisea (Delise ex Hepp) Körber = *B. laurocerasi*
aurantiaca Vězda = *Fellhanera aurantiaca*
bacillifera (Nyl.) Arnold = *B. circumspecta*
beckhausii Körber = *Biatora beckhausii* (Printzen 2014)
caloosensis (Tuck.) Zahlbr. = *B. hostheleoides*
carneoalbida (Müll. Arg.) Coppins = *Mycobilimbia carneoalbida*
chlorantha (Tuck.) Fink = *Ropalospora chlorantha*
chlorococca (Stenh.) Lettau = *Scoliciosporum chlorococcum*
chlorosticta (Tuck.) A. Schneider = *Micarea chlorosticta*
citrinella (Ach.) Branth & Rostrup = *Arthrorhaphis citrinella*
clementis Hasse = *Bactrospora patellarioides* (Ekman 1996)
cuprea (A. Massal.) Lettau = *Lecania cuprea* (Ekman 1996)

cupreorosella (Nyl.) A. Schneider = *Lecania cuprea*
 declinis (Tuck.) Zahlbr. = *Catillaria nigroclavata*
 dryina (Ach.) Fink = *Bactrospora dryina*
 effusa auct. = *B. assulata*
 egenula (Nyl.) Arnold = *Bacidina egenula*
 egenuloidea Fink = *Bacidina egenuloidea*
 endocyanea (Tuck. ex Willey) Zahlbr. = *Micarea endocyanea*
 endoleuca auct. = *B. laurocerasi*
 epixanthoides (Nyl.) Lettau = *Mycobilimbia epixanthoides*
 flavovirescens (Dickson) Anzi = *Arthrorhaphis citrinella*
 floridana (Tuck.) Zahlbr. = *Fellhanera floridana*
 fusca (A. Massal.) Du Rietz = *Mycobilimbia tetramera*
 fuscorubella (Hoffm.) Bausch = *B. polychroa*
 fuscorubella var. suffusa (Fr.) Fink = *B. suffusa*
 globulosa (Flörke) Hafellner & V. Wirth = *Biatora globulosa*
 gyalectiformis (Zahlbr.) Hasse = *Ramonia gyalectiformis*
 gyalizella (Nyl.) Zahlbr. = *Gyalecta gyalizella* (Baloch et al. 2013a)
 hegetschweileri auct. = *B. vermifera* (Ekman 1996)
 hegetschweileri (Hepp) Vainio = *B. subincompta* (Nyl.) Arnold (Ekman 1996)
 hemipolia (Nyl.) Malme (Weber & Wittman 2000, Czarnota & Coppins 2007) = *Biatora hemipolia* (Printzen 2014)
 herrei Zahlbr. = *Ophioparma rubricosa*
 hypnophila (Turner ex Ach.) Zahlbr. = *Bilimbia sabuletorum*
 incompta (Borrer ex Hooker) Anzi = misidentification for North America
 intermedia (Hepp ex Stizenb.) Arnold = *Bacidina assulata* (Ekman 1996)
 inundata (Fr.) Körber = *Bacidina inundata*
 laurocerasi subsp. idahoensis (H. Magn.) S. Ekman = *B. idahoensis* (McCune et al. 2014b)
 leucophyllina (Nyl.) Fink = misidentification for North America
 lignaria (Ach.) Lettau = *Micarea lignaria*
 lugubris (Sommerf.) Zahlbr. = *Ropalospora lugubris*
 luteola "(Ach.) Mudd" = *B. rubella*
 meadii (Tuck. ex Willey) Zahlbr. = *Byssoloma meadii*
 melaena (Nyl.) Zahlbr. = *Micarea melaena*
 microcarpa (Th. Fr.) Lettau = *Bilimbia microcarpa*
 microphyllina auct. = *Phyllopsora santensis*
 microphyllina (Tuck.) Riddle = misidentification for North America
 minuscula Anzi = *B. beckhausii*
 molybditis (Tuck.) Zahlbr. = *B. medialis*
 muscorum (Sw.) Mudd = *B. bagliettoana*
 naegelii (Hepp) Zahlbr. = *Lecania naegelii*
 nivalis Follmann = *Stereocaulon nivale*
 obscurata (Sommerf.) Zahlbr. = *Mycobilimbia tetramera*
 pallens (Kullhem) Zahlbr. = *Biatora pallens* (Printzen & Otte 2005)
 pammellii (Fink) Zahlbr. = *Bacidia granosa* (Ekman 2014)
 phacodes auct. N. Am. = *Bacidina californica*, in part
 populorum (A. Massal.) Trevisan = *Arthrosporum populorum*
 rosella (Pers.) De Not. = *B. rosellizans* for North American reports
 rubricosa (Müll. Arg.) Zahlbr. = *Ophioparma rubricosa*
 sabuletorum (Schreber) Lettau = *Bilimbia sabuletorum*
 sibiriensis (Willey ex Rothr.) Zahlbr. = *Lecania subfuscula* (Ekman 1996)
 sphaeroides (Dickson) Zahlbr. = *Mycobilimbia pilularis*
 sphaeroides auct. non (Dickson) Zahlbr. = *Mycobilimbia carneoalbida*
 stigmatella (Tuck.) Zahlbr. = *Lecania stigmatella*
 subfuscula (Nyl.) Th. Fr. = *Lecania subfuscula*
 tetramera (De Not.) Coppins = *Mycobilimbia tetramera*
 trachona (Ach.) Lettau North American reports are *B. coprodes* (Llop & Ekman 2004)

trisepta (Hellbom) Zahlbr. = *Micarea peliocarpa*
umbrina (Ach.) Bausch = *Scoliciosporum umbrinum*
verecundula (Th. Fr.) = misidentification for North America (Ekman 1996)

BACIDINA Vězda

aenea S. Ekman
apiahica (Müll. Arg.) Vězda Syn.: *Bacidia apiahica*
arnoldiana (Körber) V. Wirth & Vězda Syn.: *Bacidia arnoldiana*
assulata (Körber) S. Ekman Syn.: *Bacidia assulata*, *B. effusa*, *B. intermedia*
brittoniana (Riddle) LaGreca & S. Ekman (Berger & LaGreca 2014)
californica S. Ekman Syn.: *Bacidia phacodes* auct. N.A., *B. albescens* auct. N.A.?
chlorotricula (Nyl.) Vězda & Poelt (Ekman 1996)
contecta S. Ekman & T. Sprib. (Spribille et al. 2009)
crystallifera S. Ekman
delicata (Leighton) V. Wirth & Vězda (Harris & Lendemer 2005)
egenula (Nyl.) Vězda Syn.: *Bacidia egenula*
egenuloidea (Fink) S. Ekman Syn.: *Bacidia egenuloidea*
inundata (Fr.) Vězda Syn.: *Bacidia inundata*
neosquamulosa (Aptroot & van Herk) S. Ekman (Ekman 2004b)5
pallidocarnea (Müll. Arg.) Vězda (Seavey & Seavey 2012)
phacodes (Körber) Vězda (Harris & Ladd 2005)
ramea S. Ekman
squamellosa S. Ekman
phacodes (Körber) Vězda = *Bacidina californica*, in part, for N.A. records
varia S. Ekman = *B. brittoniana*

BACIDIOPSORA Kalb

squamulosula (Nyl.) Kalb (Seavey et al. 2014)

BACTROSPORA A. Massal.

acicularis (C. W. Dodge) Egea & Torrente (Egea et al. 2004a)
brevispora R.C. Harris
brodoi Egea & Torrente
carolinensis (Ellis & Everh.) R. C. Harris (Knudsen et al. 2011b)
cascadensis Ponzetti & McCune (Ponzetti & McCune 2006)
denticulata (Vainio) Egea & Torrente
dryina (Ach.) A. Massal. Syn.: *Bacidia dryina*
lamprospora (Nyl.) Lendemer Syn.: *Gyalecta lamprospora*, *Melampylidium macrosporum* (Lendemer 2004a)
myriadea (Fée) Egea & Torrente
patellarioides (Nyl.) Almq. Syn.: *Lecanactis patellarioides*, *Bacidia clementis*
spiralis Egea & Torrente
integrifera Seaver = *B. denticulata* (Harris 1995a)
macrospora R.C. Harris = *B. lamprospora*
mesospora R.C. Harris = *B. carolinensis*
nematospora R.C. Harris = *B. myriadea*

BACULIFERA Marbach & Kalb

curtisii (Tuck.) Marbach Syn.: *Buellia curtisii* (Marbach 2000), *Gyrostomum curtisii*
imshaugiana (R. C. Harris) Marbach Syn.: *Buellia imshaugiana* (Marbach 2000)

BAEOMYCES Pers.

carneus Flörke
placophyllus Ach.
rufus (Hudson) Rebent.
absolutus Tuck. = *Dibaeis absoluta*

aeruginosa (Scop.) DC. = Icmadophila ericetorum
byssoides (L.) Ach. (Claassen 1912) = B. rufus
fungoides (Sw.) Ach. North American reports are Dibaeis baeomyces
roseus Pers. = Dibaeis baeomyces

BAGLIETTOA A. Massal.

baldensis (A. Massal.) Vězda (Breuss 2007a) Syn.: Verrucaria baldensis
calciseda (DC.) Gueidan & Cl. Roux Syn.: Verrucaria calciseda (Knudsen & Kocourková 2009b)
marmorea (Scop.) Gueidan & Cl. Roux Syn.: Verrucaria marmorea (Yuzon et al. 2014)
rubrocincta (Breuss) Gueidan & Cl. Roux (Yuzon et al. 2014) Syn.: Verrucaria rubrocincta

BATHELIUM Ach. (Harris 1995a)

carolinianum (Tuck.) R. C. Harris (Harris 1995a) Syn.: Trypethelium carolinianum
madreporiforme (Eschw.) Trevisan (Harris 1995a) Syn.: Laurera madreporiformis

BELLEMERE Hafellner & Cl. Roux

alpina (Sommerf.) Clauzade & Cl. Roux Syns.: Lecanora alpina, L. applegatei, Aspicilia alpina
cinereorufescens (Ach.) Clauzade & Cl. Roux Syns.: Aspicilia cinereorufescens, Lecanora cinereorufescens
diamarta (Ach.) Hafellner & Cl. Roux Syn.: Aspicilia diamarta
sanguinea (Kremp.) Hafellner & Cl. Roux Syns.: Aspicilia sanguinea, Lecanora sanguinea
subsolediza (Lynge) R. Sant. Syns.: Lecidea subsolediza, Aspicilia subsolediza

BELLEMERELLA Nav.-Ros. & Cl. Roux

***ritae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2007)

BELONIA Körber ex Nyl. = **GYALECTA** (Baloch et al. 2013a)

americana Fink ex Hedr. = Robergea pupula, but excluded as a non-lichen
fennica Vainio = Gyalecta russula
russula Körber ex Nyl. = Gyalecta russula

BIATORA Fr.

aegrefaciens Printzen (Printzen et al. 2002)
alaskana Printzen & Tønsberg (Printzen & Tønsberg 1999)
appalachensis Printzen & Tønsberg (Printzen & Tønsberg 2004)
aureolepra T. Sprib. & Tønsberg (Spribille et al. 2009)
beckhausii (Körber) Tuck. Syn.: Bacidia beckhausii (Printzen 2014)
caulophylla Tuck. Possibly belongs to Lecanora (Ryan & Nash 1997a)
chrysantha (Zahlbr.) Printzen in V. Wirth (Printzen 1995)
chrysanthoides Printzen & Tønsberg (Printzen & Tønsberg 2003)
cuprea (Sommerf.) Fr. Syn.: Lecidea cuprea
efflorescens (Hedl.) Räsänen (Printzen 1995) Syns.: Lecidea efflorescens, L. epixanthoidiza
ementiens (Nyl.) Printzen Syn.: Lecidea ementiens (Printzen 2014)
fallax Hepp (Printzen & Tønsberg 1999)
flavopunctata (Tønsberg) Hinter. & Printzen Syn.: Lecanora flavopunctata
globulosa (Flörke) Fr. Syns.: Bacidia globulosa, Catillaria globulosa, Lecidea globulosa, L. sylvana (Printzen 2004)
helvola Körber ex Hellbom (Spribille et al. 2010) Syn.: Lecidea helvola
hemipolia (Nyl.) S. Ekman & Printzen Syn.: Bacidia hemipolia (Printzen 2014)
hypophaea Printzen & Tønsberg (Printzen & Tønsberg 1999)
kodiakensis Printzen & Tønsberg (Printzen & Tønsberg 2004)
ligni-mollis T. Sprib. & Printzen (Spribille et al. 2009)
longispora (Degel.) Lendemer & Printzen Syn.: Lecidea helvola var. longispora (Lendemer 2004b)
meiocarpa (Nyl.) Arnold Syn.: Lecidea meiocarpa, L. minuta
meiocarpa var. **tacomensis** (Printzen & Tønsberg) Printzen & Tønsberg (Printzen & Tønsberg 2004)
Syn.: Lecidea meiocarpa var. tacomensis

nobilis Printzen & Tønsberg (Printzen & Tønsberg 1999)
ocelliformis (Nyl.) Arnold (Printzen & Otte 2005)
oligocarpa Printzen & Tønsberg (Printzen & Tønsberg 2004)
pallens (Kullhem) Printzen (Printzen & Otte 2005) Syns.: *Cliostomum pallens*, *Bacidia pallens*
pausiaca Printzen & Tønsberg (Printzen & Tønsberg 2003)
pontica Printzen & Tønsberg (Printzen & Tønsberg 2003)
printzenii Tønsberg (Tønsberg 2002)
pycnidiata Printzen & Tønsberg (Printzen & Tønsberg 2004)
rufidula (Graewe) S. Ekman & Printzen (Printzen & Tønsberg 1999)
sphaeroidiza (Vainio) Printzen & Holien (Dillman et al. 2012)
subduplex (Nyl.) Printzen (Printzen 1995) Syns.: *Lecidea subduplex*, *L. apochroeiza*, *L. internectens*
toensbergii Holien & Printzen (Printzen & Tønsberg 1999)
vacciniicola (Tønsberg) Printzen (Printzen 1995) Syn.: *Lecidea vacciniicola*
vernalis (L.) Fr. Syn.: *Lecidea vernalis*
atropurpurea (Schaerer) Hepp = *Catinaria atropurpurea*
albohyalina (Nyl.) Bagl. & Carestia = *Lecidea albohyalina* (Printzen & Tønsberg 1999)
amaurospoda Anzi = *Lecidea pullata*
anthracophila (Nyl.) Hafellner = *Carbonicola anthracophila*
botryosa Fr. (Printzen 1995) = *Hertelidea botryosa*
carneoalbida (Müll. Arg.) Coppins = *Mycobilimbia carneoalbida*
cladoniscum Willey (see note under *Nesolechia cladoniscum*)
cyrtella (Ach.) W. Mann = *Lecania cyrtella*
decipiens (Ehrh.) Fr. = *Psora decipiens*
epixanthoides (Nyl.) Diederich = *Mycobilimbia epixanthoides*
floridana Tuck. = *Fellhanera floridana*
franciscana Tuck. = *Lecania franciscana*
friesii (Ach.) Tuck. = *Xylopsora friesii*
furvonigrans Tuck. ex Willey = *Lecidea furvonigrans*
fuscorubella (Hoffm.) Tuck. = *Bacidia polychroa*
hypomela “Nyl.” (Mohr 1901) = *Lecidea hypomela*?
meadii Tuck. ex Willey = *Byssoloma meadii*
molybdis Tuck. = *Bacidia medialis*
myriocarpella G. Merr. = *Lecidea enalla* (Printzen 1995)
paddensis Tuck. = *Lecanora paddensis* (McCune et al. 2014b)
papillariae Willey (see note under *Nesolechia cladoniscum*)
parvifolia (Pers.) Tuck. = *Phyllopsora parvifolia*
petri Tuck. = *Romjularia lurida*
porphyrospoda Anzi = *Myochroidea porphyrospoda*
pullata Norman = *Frutidella pullata*
pullula Tuck. = *Lecanora anopta*
rufofusca Anzi = *Myochroidea rufofusca*
rufonigra Tuck. = *Psorula rufonigra*
russula (Ach.) Mont. = *Ramboldia russula*
russellii Tuck. = *Psora russellii*
scrupulosa Eckfeldt = *Fuscidea scrupulosa*
sibiriensis Willey ex Rothr. = *Lecania subfuscula* (Ekman 1996, Dillman et al. 2012)
sphaeroides (Dickson) Körber = *Mycobilimbia pilularis*
suffusa Fr. = *Bacidia suffusa*
turgidula (Fr.) Nyl. = *Lecidea turgidula*
varians (Ach.) Eschw. = *Lecidea varians*
viridescens (Schrader) W. Mann = *Trapeliopsis viridescens*

BIATORELLA De Not.

camptocarpa (Tuck.) Fink (Tuckerman 1888, Fink 1935, Esslinger & Tucker 2009)
conspurcans Norman (Dillman et al. 2012)
contigua N. S. Golubk. & Piin (Zhurbenko et al. 2005)

cyphalea (Tuck.) Zahlbr.
floridensis H. Magn.
hemisphaerica Anzi
 albidula (Willey) Zahlbr. = Myrionora albidula
 campestris (Fr.) Almq. = Sarcosagium campestre
 clauzadeana Llimona & Vězda = Acarospora clauzadeana
 clavus (DC.) Th. Fr. = Sarcogyne clavus
 conspersa (Fée) Vainio = Piccolia conspersa
 fossarum (Dufour ex Fr.) Th. Fr. = B. hemisphaerica for North American records
 geophana (Nyl.) Rehm (Fink 1935) = Steinia geophana
 hypophaea (Nyl.) Blomb. & Forssell = Sarcogyne hypophaea
 kulshanensis Herre = Sporastatia testudinea (Ketzner 2010)
 leucampyx Tuck. = Bacidia schweinitzii (Lendemer & Harris 2012)
 microhaema Norman = Strangospora microhaema
 moriformis (Ach.) Th. Fr. = Strangospora moriformis
 nannaria (Tuck.) Zahlbr. (Fink 1935) = Piccolia nannaria
 ochrophora (Nyl.) Arnold = Piccolia ochrophora
 plicata (H. Magn.) Zahlbr. = Sarcogyne plicata (Knudsen & Lendemer 2005a)
 pruinosa "(Körber) Mudd" = Sarcogyne regularis
 rappii Zahlbr. = Ramonia microspora (Lendemer & Knudsen 2011)
 +resinae (Fr.) Th. Fr. = Sarea resinae
 revertens (Tuck.) Herre (Tuckerman 1882, Fink 1935) = Polysporina simplex (Tucker & Jordan 1979)
 simplex (Taylor) Branth & Rostrup = Polysporina simplex
 terrena Hasse = Sarcogyne crustacea (Knudsen & Kocourková 2010a)
 testudinea (Ach.) A. Massal. = Sporastatia testudinea

BIATORIDIUM J. Lahm

delitescens (Arnold) Hafellner (Ekman 1996)
monasteriense J. Lahm ex Körber (McCune & Rosentreter 2014)

BIATOROPSIS Räsänen

***usnearum** Räsänen

BILIMBIA De Not.

accedens Arnold Syns.: Mycobilimbium accedens, Myxobilimbium accedens (Spribille et al. 2010)
lobulata (Sommerf.) Hafellner & Coppins Syns.: Mycobiolimbium lobulate, Toninia lobulata (Veldkamp 2004)
microcarpa (Th. Fr.) Th. Fr. Syns.: Bacidia microcarpa, Mycobilimbium microcarpa (Veldkamp 2004)
sabuletorum (Schreber) Arnold Syns.: Bacidia sabuletorum, B. hypnophila, Mycobilimbium sabuletorum, Myxobilimbium sabuletorum (Veldkamp 2004)
 acclinis (A. Massal.) Trevisan (Fink 1935) = Arthrosporum populorum (Ekman 1996)
 caloosensis (Tuck.) Fink (Fink 1935) = Bacidia hostheleoides (Ekman 1996)
 caudata (Nyl.) Fink = Ropalospora lugubris
 cupreosella (Nyl.) Bausch (Fink 1935) = Lecania cuprea (Ekman 1996)
 declinis (Tuck.) Fink (Fink 1935) = Catillaria nigroclavata (Ekman 1996)
 floridana (Tuck.) Riddle (Fink 1935) = Fellhanera floridana (Ekman 1996)
 granosa (Tuck.) Fink (Fink 1935) = Bacidia granosa (Ekman 2014)
 gyalectiformis Zahlbr. = Ramonia gyalectiformis
 gyalizella (Nyl.) Fink (Fink 1935) = Gyalecta gyalizella (Baloch et al. 2013a)
 lignaria (Ach.) A. Massal. (Fink 1935) = Micarea lignaria
 meadii (Tuck.) Fink (Fink 1935) = Byssoloma meadii (Tuck. ex Willey) S. Ekman (Ekman 1996)
 melaena (Nyl.) Arnold (Fink 1935) = Micarea melaena
 molybdis (Tuck.) Fink (Fink 1935) = Bacidia medialis (Ekman 1996)
 naegelii (Hepp) Kremp. (Fink 1935) = Lecania naegelii
 pammellii Fink (Fink 1935) = Bacidia granosa (Ekman 2014)
 ravenelii (Tuck.) Fink (Fink 1935) = Bacidia ravenelii (Ekman 1996)

rubidofusca (Willey) Fink (Fink 1935) = *Bacidia rubidofusca* (Ekman 1996)
 rubricosa (Müll. Arg.) Fink (Fink 1935) = *Ophioparma rubricosa* (Ekman 1996)
 sphaeroides (Dickson) Körber (Fink 1935) = *Mycobilimbia pilularis* (Ekman 1996)
 sphaeroides auct. = *Mycobilimbia carneoalbida* (Ekman 1996)
 trachona (Ach.) Trevisan (Fink 1935) North American reports are *Bacidia coprodes* (Llop & Ekman 2004)
 trisepta (Nägeli) Arnold = *Micarea peliocarpa* (Santesson et al. 2004)
 tricholoma (Mont.) Fink = *Byssoloma tricholomum*

BISPORA Fuckel

*christiansenii D. Hawksw. (Alstrup & Cole 1998) = *Intralichen christiansenii*
 *lichenum Diederich (Cole & Hawksworth 2001) = *Intralichen lichenum*

BLASTENIA A. Massal. (Arup et al. 2013)

ammiospila (Wahlenb.) Arup, Søchting & Frödén Syns. *Caloplaca ammiospila*, *C. cinnamomea*, *C. discoidalis*
ferruginea (Hudson) Th. Fr. Syn.: *Caloplaca ferruginea*, *Placodium ferrugineum*
furfuracea (H. Magn.) Arup, Søchting & Frödén Syn.: *Caloplaca furfuracea*
 atosanguinea (G. Merr.) Fink (Fink 1935) = *Caloplaca atosanguinea*
 crenularia (With.) Arup, Søchting & Frödén = misidentification for North America (Wetmore 1996)
 diphasia (Tuck.) Zahlbr. = *Caloplaca diphasia*
 festiva (Ach.) A. Massal. = *Caloplaca crenularia*, but North American records incorrect according to Wetmore (1996)
 floridana (Tuck.) Zahlbr. = *Caloplaca floridana*
 fraudans (Th. Fr.) B. de Lesd. = *Caloplaca fraudans*
 luteominia (Tuck.) Hasse = *Polycauliona luteominea*
 novomexicana Fink = a *Caloplaca* sp.?
 rubrofusca B. de Lesd. = a *Caloplaca* sp.?
 sinapisperma (DC.) A. Massal. = *Bryoplaca sinapisperma*

BLENNOTHALLIA Trevisan (Otálora et al. 2014)

crispa (Hudson) Otálora, P. M. Jørg. & Wedin Syn.: *Collema cheilum*, *C. crispum*
fecunda (Degel.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema fecundum*

BOMBYLIOSPORA De Not. ex A. Massal. = MEGALOSPORA

domingensis (Pers.) Zahlbr. = *Letrouitia domingensis*
 pachycheila (Tuck.) Zahlbr. = *Megalospora pachycheila*
 porphyritis (Tuck.) A. Massal. = *Megalospora porphyritis*
 tuberculosa (Fée) De Not. = *Megalospora tuberculosa*
 vulpina (Nyl.) J. M. Burgess = nom. inval. = *Letrouitia vulpina*

BOTRYDINA Bréb. = LICHENOMPHALIA

botryoides (L.) Redhead & Kuyper = *Lichenomphalia umbellifera*
 luteovitellina (Pilát & Nannf.) Redhead & Kuyper = *Lichenomphalia alpina*
 velutina (Quélet) Redhead & Kuyper = *Lichenomphalia velutina*
 viridis (Ach.) Redhead & Kuyper = *Lichenomphalia hudsoniana*
 vulgaris Bréb. sens. str. = *Lichenomphalia umbellifera*

BOTRYOLEPRARIA Canals, Hernández-Mariné, Gómez-Bolea & Llimona

lesdainii (Hue) Canals, Hernández-Mariné, Gómez-Bolea & Llimona Syn.: *Lepraria lesdainii* (Canals et al. 1997)

BOTTARIA A. Massal. = MYCOPORUM Flotow ex Nyl.

cruentata Müll. Arg. = *Pyrenula cruentata*

BRIANARIA S. Ekman & M. Svensson (Ekman & Svensson 2014)

bauschiana (Körber) S. Ekman & M. Svensson Syns.: *Lecidea dilutiuscula*, *L. lynceola* auct. N. Am., *Micarea bauschiana*

lutulata (Nyl.) S. Ekman & M. Svensson Syns.: *Lecidea lutulata*, *Micarea lutulata*

sylvicola (Flotow ex Körber) S. Ekman & M. Svensson Syns.: *Lecidea sylvicola*, *Micarea sylvicola*

tuberculata (Sommerf.) S. Ekman & M. Svensson Syn.: *Micarea tuberculata*

BRIANCOPPINSIA Diederich, Ertz, Lawrey & van den Boom (Diederich et al. 2012)

***cytophora** (Vouaux) Diederich, Ertz, Lawrey & van den Boom (Diederich et al. 2012, Kocourková et al. 2012) Syn.: *Phoma cytophora*

BRIGANTIAEA Trevisan

fuscolutea (Dickson) R. Sant. Syn.: *Lopadium fuscoluteum*

leucoxantha (Sprengel) R. Sant. & Hafellner Syn.: *Lopadium leucoxanthum*, *Heterothecium leucoxanthum*

praetermissa Hafellner & St. Clair (Hafellner 1997)

purpurata (Zahlbr.) Hafellner & Bellem. (Goward et al. 1996) = *B. praetermissa* (Hafellner 1997)

BRODOA Goward

oroarctica (Krog) Goward Syn.: *Hypogymnia oroarctica*.

atrofusca (Schaerer) Goward Syns.: *Hypogymnia atrofusca*, *Parmelia atrofusca*. North American reports are probably misidentifications of *Brodoa oroarctica*

intestiniformis (Vill.) Goward Syns.: *Hypogymnia intestiniformis*, *H. encausta*, *Parmelia*

intestiniformis, *P. encausta*. North American reports are misidentifications of *Brodoa oroarctica*

BRUCEA Rikkinen (Rikkinen 2003b) = **BRUCEOMYCES** Rikkinen (Tuovila et al. 2012)

+**castoris** Rikkinen = *Bruceomyces castoris*

BRUCEOMYCES Rikkinen (Tuovila et al. 2012)

+**castoris** Rikkinen

BRYOBILIMBIA Fryday, Printzen & S. Ekman (Fryday et al. 2014)

ahlesii (Körber) Fryday, Printzen & S. Ekman Syns.: *Lecidea ahlesii*, *L. delincta*

ahlesii var. **nemoralis** (J. Lowe) Fryday, Printzen & S. Ekman Syns.: *Lecidea ahlesii* var. *nemoralis*, *L. nemoralis*

diapensiae (Th. Fr.) Fryday, Printzen & S. Ekman Syn.: *Lecidea diapensiae*

hypnorum (Lib.) Fryday, Printzen & S. Ekman Syns.: *Lecidea hypnorum*, *L. fusca*, *L. templetonii*, *L. atrofusca*, *L. sanguineoatra* sens. Nyl., *Mycobilimbia hypnorum*

BRYOCAULON Kärnefelt

divergens (Ach.) Kärnefelt Syns.: *Alectoria divergens*, *Cornicularia divergens*, *Coelocaulon divergens*

pseudosatoanum (Asahina) Kärnefelt Syn.: *Cornicularia pseudosatoana*

BRYODINA Hafellner

rhypariza (Nyl.) Hafellner & Türk (Zhurbenko 2013)

BRYONORA Poelt

castanea (Hepp) Poelt Syn.: *Lecanora castanea*

curvescens (Mudd) Poelt Syn.: *Lecania curvescens*

pruinosa (Th. Fr.) Holtan-Hartwig

septentrionalis Holtan-Hartwig

BRYOPHAGUS Nitschke ex Arnold

gloeocapsa Nitschke ex Arnold (fide J. Hafellner, see Appendix) = *Cryptodiscus gloeocapsa*

BRYOPLACA Søchting, Frödén & Arup (Arup et al. 2013)

jungermanniae (Vahl) Søchting, Frödén & Arup Syn.: *Caloplaca jungermanniae*

sinapisperma (Lam. & DC.) Søchting, Frödén & Arup Syns.: *Blastenia sinapisperma*, *Caloplaca leucoraea*, *C. sinapisperma*

tetraspora (Nyl.) Søchting, Frödén & Arup Syn.: *Caloplaca tetraspora*

BRYOPOGON Link

negativus Gyelnik = *Bryoria fuscescens*

pacificus Gyelnik = *Bryoria fuscescens*

BRYORIA Brodo & D. Hawksw.

alaskana Myllys & Goward (Myllys et al. 2016)

ambigua (Motyka) Bystr. & Fabiszewski Syn.: *Alectoria ambigua* (Bystrek & Fabiszewski 1998)

americana (Motyka) Holien Syn.: *Alectoria americana* (Holien 1994, Myllys et al. 2011)

bicolor (Ehrh.) Brodo & D. Hawksw. Syn.: *Alectoria bicolor*

carlottae Brodo & D. Hawksw.

cervinula Motyka ex Brodo & D. Hawksw. Syn.: *Alectoria cervinula*

fabiszewskiana Bystr. (Bystrek & Fabiszewski 1998)

fremontii (Tuck.) Brodo & D. Hawksw. Syns.: *Alectoria fremontii*, *A. corneliae*, *A. tenerrima*, *A. tortuosa*

friabilis Brodo & D. Hawksw. (Velmala et al. 2014)

furcellata (Fr.) Brodo & D. Hawksw. Syns.: *Alectoria nidulifera*, *Cornicularia fibrillosa*

furcellata subsp. **hawksworthiana** Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

fuscescens (Gyelnik) Brodo & D. Hawksw. Syns.: *Alectoria fuscescens*, *A. positiva*, *Bryopogon pacificus*

glabra (Motyka) Brodo & D. Hawksw. Syn.: *Alectoria glabra*

inactiva Goward, Velmala & Myllys (Velmala et al. 2014)

irwinii Goward & Myllys (Myllys et al. 2016)

kockiana Velmala, Myllys & Goward (Velmala et al. 2014)

nadvornikiana (Gyelnik) Brodo & D. Hawksw. Syns.: *Alectoria nadvornikiana*, *A. altaica*

nitidula (Th. Fr.) Brodo & D. Hawksw. Syns.: *Alectoria nitidula*, *A. irvingii*, *A. lanea* auct.

pikei Brodo & D. Hawksw. Syns.: *Alectoria cana*, North American reports of *A. capillaris* & *A. setacea*

pseudofuscescens (Gyelnik) Brodo & D. Hawksw. Syns.: *Alectoria achariana*, *A. norstictica* nom. inval., *A. subtilis* nom. inval. (Velmala et al. 2014)

salazinica Brodo & D. Hawksw.

simplicior (Vainio) Brodo & D. Hawksw. Syns.: *Alectoria simplicior*, *A. nana* nom. nudum

tenuis (E. Dahl) Brodo & D. Hawksw. Syn.: *Alectoria tenuis*

trichodes (Michaux) Brodo & D. Hawksw. subsp. **trichodes** Syns.: *Alectoria canadensis*, *A. delicata* nom. nudum

trichodes subsp. **brodoana** Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

trichodes subsp. **canadensis** (Motyka) Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

vrangiana (Gyelnik) Brodo & D. Hawksw. (Velmala et al. 2014)

abbreviata (Müll. Arg.) Brodo & D. Hawksw. = *Nodobryoria abbreviata*

capillaris (Ach.) Brodo & D. Hawksw. A European species; North American records are *B. pikei* (Velmala et al. 2014)

chalybeiformis (L.) Brodo & D. Hawksw. = *B. fuscescens* (Velmala et al. 2014)

implexa (Hoffm.) Brodo & D. Hawksw. A European species; North American records are *B. kockiana*

lanestris (Ach.) Brodo & D. Hawksw. = *B. fuscescens* (Velmala et al. 2014)

oregana (Tuck. ex Willey) Brodo & D. Hawksw. = *Nodobryoria oregana*

pseudocapillaris Brodo & D. Hawksw. = *Sulcaria spiralifera* (Myllys et al. 2014)

setacea (Ach.) Brodo & D. Hawksw. Not in North America.

spiralifera Brodo & D. Hawksw. = *Sulcaria spiralifera* (Myllys et al. 2014)

subcana (Nyl. ex Stizenb.) Brodo & D. Hawksw. = *B. fuscescens* (Velmala et al. 2014)

subdivergens (E. Dahl) Brodo & D. Hawksw. = *Nodobryoria subdivergens*

tortuosa (G. Merr.) Brodo & D. Hawksw. = *B. fremontii* (Velmala et al. 2009)

trichodes subsp. **americana** (Motyka) Brodo & D. Hawksw. = *B. americana* (Myllys et al. 2011)

BRYOSCYPHUS Spooner

***lichenicola** Alstrup & M. S. Cole (Alstrup & Cole 1998)

BRYOSTIGMA Poelt & Döbbeler

muscigenum (Th. Fr.) Frisch & G. Thor Syn.: *Arthonia muscigena*, *A. leucodontis* (Frisch et al. 2014)
leucodontis Poelt & Döbbeler = *Bryostigma muscigenum*

BUELLIA De Not.

abstracta (Nyl.) H. Olivier (Giralt et al. 2011, Knudsen & Kocourková 2010c)

aethalea (Ach.) Th. Fr.

arborea Coppins & Tønsberg (Tønsberg & McCune 2001)

arnoldii Servít Syn.: *Hafellia arnoldii*

#**badia** (Fr.) A. Massal. Syn.: *Amandinea turgescens*

bahiana Malme Syn.: *Hafellia bahiana*

bahiana var. **pleiotropa** Malme

bolacina Tuck.

calcariaecola B. de Lesd.

callispora (C. Knight) J. Steiner Syn.: *Hafellia callispora*

capitis-regum W. A. Weber

cedricola Werner (Nordin 1999)

christophii Bungartz (Bungartz et al. 2004a)

circumpallida H. Magn. Syn.: *Endohyalina circumpallida*

concinna Th. Fr. (Bungartz et al. 2004b)

conspirans (Nyl.) Vainio (Bungartz 2004)

crystallifera (Vainio) Hav. (Goward et al. 1996)

curatellae Malme Syn.: *Hafellia curatellae*

disciformis (Fr.) Mudd Syn.: *Hafellia disciformis*

dispersa A. Massal.

eganii Bungartz (Bungartz & Nash. 2004a)

elegans Poelt

elizae (Tuck.) Tuck. Syn.: *Gassicurtia elizae* (Lendemer et al. 2013)

epigaea (Hoffm.) Tuck.

erubescens Arnold

[**Hafellia fosteri** Imshaug & Sheard]

georgei Trinkaus, H. Mayrhofer & Elix (Bungartz et al. 2007)

griseovirens (Turner & Borrer ex Sm.) Almb.

halonia (Ach.) Tuck.

immersa Lynge

***imshaugii** Hafellner

jugorum (Arnold) Arnold

lacteoidea B. de Lesd.

lepidastra (Tuck.) Tuck. Syn.: *Lecidea lepidastra*

leptocline (Flotow) A. Massal.

maculata Bungartz (Bungartz 2004a)

mamillana (Tuck.) W. A. Weber Syn.: *Rinodina mamillana*, *R. thomae*

maritima (A. Massal.) Bagl. (Bungartz et al. 2007)

mexicana J. Steiner (Nordin 2000)

microbola (Tuck. ex Fink) Sheard Syn.: *Rinodina microbola*

#**miriquidica** Scheid. (Fryday 2006)

muriformis A. Nordin & Tønsberg (Nordin 1999)

nantiana B. de Lesd.

nashii Bungartz (Bungartz 2004)

navajoensis Bungartz (Bungartz 2004)

nigra (Fink) Sheard Syn.: *Rinodina nigra*

occidentalis Lynge (Lepage 1972)

ocellata (Flotow) Körber
oidalea (Nyl.) Tuck. Syn.: *Rhizocarpon oidaleum*
parastata (Nyl.) Zahlbr. Syn.: *Hafellia parastata*
pleiotera Malme Syn.: *Hafellia pleiotera*
prospersa (Nyl.) Riddle (Bungartz et al. 2004b)
pullata Tuck. (Bungartz et al. 2004b)
ryanii Bungartz (Bungartz et al. 2004b)
schaereri De Not.
sequax (Nyl.) Zahlbr. (Bungartz et al. 2004b) Many previous reports are *B. abstracta* (Giralt et al. 2011)
sharpiana Lendemer & R. C. Harris (Lendemer & Harris 2013a)
silicicola B. de Lesd.
smaragdula B. de Lesd.
spuria (Schaerer) Anzi
stellulata (Taylor) Mudd
stigmathea Körber
subaethalea B. de Lesd. (Bungartz & Nash 2004a)
subdispersa Mig. (Nordin 1999)
tesserata Körber (Rico et al. 2003)
triseptata A. Nordin (Nordin 1999)
tyrolensis Körber (Bungartz 2004)
uberior Anzi
vilis Th. Fr.
 *adjuncta Th. Fr. (Esslinger & Egan 1995) = *Amandinea adjuncta*
aethaleoides (Nyl.) H. Olivier = *B. aethalea*
alboatra (Hoffm.) Th. Fr. = *Diplotomma alboatrum*
ambigua (Ach.) Malme = *Diplotomma ambiguum*
amphidexia Imshaug ex R. C. Harris = *Buellia circumpallida*
atrata (Sm.) Anzi = *Orphniospora moriopsis*
badioatra (Flörke ex Sprengel) Körber = *Rhizocarpon badioatrum*
blasteniospora Zahlbr. = *B. parastata*
blumeri Zahlbr. = *B. dispersa*
caloosensis Tuck. = *Gassicurtia catasema*
canescens (Dickson) De Not. = *Diploicia canescens*
catasema (Tuck.) Tuck. = *Gassicurtia catasema*
chloroleuca Körber (Bungartz et al. 2007, Spribille & Björk 2008) = *Tetramelas chloroleucus*
chlorophaea (Hepp ex Leighton) Lettau = *Diplotomma chlorophaeum*
coccinea (Fée) Aptroot = *Gassicurtia coccinea*
colludens (Nyl.) Arnold = *Rhizocarpon hochstetteri*
coniops (Wahlenb.) Th. Fr. = *Amandinea coniops*
contermina Arnold = *B. uberior*
coracina (Nyl.) Körber = *Orphniospora moriopsis*
curtisii (Tuck.) Imshaug = *Baculifera curtisii*
dakotensis (H. Magn.) Bungartz = *Amandinea dakotensis*
dialyta (Nyl.) Tuck. = *Chrimofulvea dialyta*
epipolia (Ach.) Mong. = *Diplotomma epipolium*
fimbriata (Tuck.) Imshaug = *B. tesserata*
geographica (L.) Tuck. = *Rhizocarpon geographicum*
geophila (Flörke ex Sommerf.) Lynge = *Tetramelas geophila*, but North American reports are *T. terricolus*
glaucomarioidea Willey ex Tuck. = *Dactylospora glaucomarioides*
glaziouana (Kremp.) Müll. Arg. = *B. mamillana*
hassei Imshaug = *B. griseovirens*
imshaugiana R. C. Harris = *Baculifera imshaugiana*
 *inquilina Tuck. = *Dactylospora inquilina*
insignis (Nägeli ex Hepp) Th. Fr. = *Tetramelas insignis*
isidians (Nyl.) Zahlbr. = excluded as doubtful

japonica (Tuck.) Tuck. (Sheard et al. 2008) = *Sculptolumina japonica*
 langloisii Imshaug = *Amandinea langloisii* (Marbach 2000)
 lauricassiae (Fée) Müll. Arg. = *Cratiria lauricassiae*
 lecanoroides H. Magn. = *Diplotomma venusta* (Bungartz et al. 2007)
 lepidastroidea Imshaug ex Bungartz (Bungartz 2004) = *B. sequax* (Giralt et al. 2011)
 leucomela Imshaug = *Amandinea leucomela*
 malmei Lynge = *B. aethalea*
 melanochlora (Kremp.) Müll. Arg. = *Cratiria melanochlora*
 modesta (Kremp.) Müll. Arg. = *Cratiria americana*
 moriopsis (A. Massal.) Th. Fr. = *Orphniospora moriopsis*
 myriocarpa (DC.) De Not. = *Amandinea punctata*
 nivalis (Bagl. & Carestia) Hertel ex Hafellner = *Diplotomma nivalis*
 notabilis Lynge = *Rinodina notabilis*
 novomexicana B. de Lesd. = *B. tyrolensis*
 pachnidisca R. C. Harris = *Gassicurtia subpulcella*
 papillata (Sommerf.) Tuck. = *Tetramelas papillatus*
 parasema (Ach.) De Not. = *B. disciformis*
 penichra (Tuck.) Hasse = *Diplotomma penichrum*
 pertusariicola Willey ex Tuck. = *Dactylospora pertusariicola*
 pinastri Erichsen (Erichsen 1940) = *Chrimofulvea pinastri*
 placodiomorpha Vainio = *Orcularia placodiomorpha*
 polyspora (Willey) Vainio = *Amandinea polyspora*
 pruinella Imshaug = *B. tesserata*
 pueblae B. de Lesd. = *B. dispersa*
 pulchella (Schrader) Tuck. = *Catolechia wahlenbergii*
 *pulverulenta (Anzi) Jatta = *Tetramelas pulverulentus*
 punctata (Hoffm.) A. Massal. = *Amandinea punctata*
 punctata var. polyspora (Willey) Fink = *Amandinea polyspora*
 radiata Tuck. = *Dimelaena radiata*
 rappii Imshaug ex R.C. Harris = *Endohyalina rappii*
 retrovertens Tuck. = *B. dispersa* (Bungartz et al. 2002)
 rinodinoidea Anzi = misidentification for North America
 rinodinospora Riddle = *B. parastata*
 rubifaciens R.C. Harris = *Chrimofulvea rubifaciens*
 saurina W. A. Weber = *Rhizocarpon saurinum*
 saxicola B. de Lesd. = *B. sequax*
 scabrosa (Ach.) A. Massal. = *Epilichen scabrosus*
 semitensis Tuck. = *B. concinna*
 stigmaea Tuck. = *B. maculata*
 stillingiana J. Steiner = *B. erubescens* (Bungartz et al. 2007)
 subalbula (Nyl.) Müll. Arg. North American reports are *B. maritima* (Bungartz et al. 2007)
 subdisciformis (Leighton) Jatta (Mohr 1901) = *B. disciformis*
 subpostumum Nyl. (Mohr 1901) = *Rhizocarpon subpostumum*, but a misidentification for North America
 subpulcella Vainio = *Gassicurtia subpulcella*
 tergestina J. Steiner & Zahlbr. = *B. dispersa*
 terricola A. Nordin (Nordin 1999) = *Tetramelas terricolus*
 thomae (Tuck.) Imshaug = *B. mamillana*
 tolucae B. de Lesd. (Nordin 1999) = *B. mexicana* (Bungartz et al. 2007)
 triphragmioides Anzi = *Tetramelas triphragmioides*
 tucsonensis Zahlbr. = *B. dispersa* (Bungartz et al. 2007)
 turgescens Tuck. = *B. badia* (Bungartz & Nash 2004c)
 turgescensoides Fink = *B. badia* (Bungartz & Nash 2004c)
 venusta (Körber) Lettau = *Diplotomma venustum*
 vernicoma (Tuck.) Tuck. = *Gassicurtia vernicoma*
 verruculosa (Sm.) Mudd = *B. aethalea*

verruculosa auct. = *B. ocellata*
wahlenbergii (Ach.) Sheard = *Catolechia wahlenbergii*
wheeleri R. C. Harris = *Ciposia wheeleri*
zahlbruckneri J. Steiner = *B. erubescens*
zahlbruckneri sensu Imshaug = mostly *Tetramelas chloroleucus* (Bungartz et al. 2007)

BUELLIELLA Fink

***inops** (Triebel & Rambold) Hafellner Syn.: *Karschia inops* (Hafellner 2004a)
***minimula** (Tuck.) Fink
***physciicola** Poelt & Hafellner (Esslinger & Egan 1995)
***poetschii** Hafellner (Hafellner et al. 2008)
***trypethelii** (Tuck.) Fink
**inquilina* (Tuck.) Fink = *Dactylospora inquilina*
**nuttallii* (Calk. & Nyl.) Fink = *Dactylospora lobariella*
**parmeliarum* (Sommerf.) Fink = *Abrothallus parmeliarum*
**saxatilis* (Schaerer) Fink = *Dactylospora saxatilis* var. *saxatilis*
**usneae* (Rabenh.) Fink = misidentification for North America

BUELLIOPSIS A. Schneider = **BUELLIA**

papillata (Sommerf.) Fink = *Tetramelas papillata*
vernica (Tuck.) A. Schneider = *Gassicurtia vernica*

BULBOTHRIX Hale

confoederata (W. L. Culb.) Hale Syn.: *Parmelia confoederata*
coronata (Fée) Hale Syn.: *Parmelia coronata*
isidiza (Nyl.) Hale
laevigatula (Nyl.) Hale Syn.: *Parmelia laevigatula*
scortella (Nyl.) Hale (Benatti & Elix 2012) Syn.: *Parmelia njalensis*, *P. scortella*
goebelii (Zenker) Hale North American reports are *B. scortella* (Benatti & Elix 2012)

BULLATINA Vězda & Poelt

aspidota (Vainio) Vězda & Poelt = *Calenia aspidotum*

BUNODOPHORON A. Massal.

melanocarpum (Sw.) Wedin Syn.: *Sphaerophorus melanocarpus*

BURGELLA Diederich & Lawrey (Diederich & Lawrey 2007)

***flavoparmeliae** Diederich & Lawrey

BYSSOLOMA Trevisan

absconditum Farkas & Vězda (Seavey & Seavey 2012)
chlorinum (Vainio) Zahlbr. (Lücking et al. 2011b)
leucoblepharum (Nyl.) Vainio
maderense Breuss (Breuss 2016)
marginatum (Arnold) Sérus.
meadii (Tuck. ex Willey) S. Ekman Syn.: *Bacidia meadii*, *Biatora meadii*, *Bilimbia meadii*
subdiscordans (Nyl.) P. James
tricholomum (Mont.) Zahlbr. Syn.: *Bilimbia tricholoma*
pubescens Vězda ex R.C. Harris (Harris 1995a) = *B. meadii* (Brodo et al. 2001)
rotuliforme (Müll. Arg.) R. Sant. = *B. subdiscordans*

CAERULEUM K. Knudsen & L. Arcadia (Arcadia & Knudsen 2012)

heppii (Nägeli ex Körber) K. Knudsen & L. Arcadia Syns.: *Acarospora aeruginosa*, *A. heppii*, *Myriospora heppii*
immersum (Fink) K. Knudsen & L. Arcadia Syns.: *Acarospora immersa*, *Myriospora immerse*

CALENIA Müll. Arg.

aspidotum (Vainio) Vězda Syn.: *Bullatina aspidota* (Lücking et al. 2007)

CALICIELLA Vainio = non-lichenized fungi

CALICIUM Pers.

abietinum Pers.

adaequatum Nyl.

adpersum Pers.

chlorosporum F. Wilson

corynellum (Ach.) Ach.

denigratum (Vainio) Tibell (McMullin et al. 2012)

glaucellum Ach.

hyperelloides Nyl.

lenticulare Ach.

leucochlorum Tuck.

montanum Tibell (Kolb & Spribille 2001)

parvum Tibell

pinastri Tibell (Selva 2013)

quercinum Pers.

salicinum Pers.

sequoiae C. Williams & Tibell (Williams & Tibell 2008)

trabinellum (Ach.) Ach

viride Pers.

albonigrum Nyl. = *Mycocalicium albonigrum*

#asikkalense Vainio = *Chaenothecopsis pusilla*

curtisii Tuck. = *Phaeocalicium curtisii*

*disseminatum Ach. = *Microcalicium disseminatum*

#floerkei Zahlbr. = *Chaenothecopsis pusilla*

fuscipes Tuck. = *Mycocalicium fuscipes*

hemisphaericum Howard = *C. adaequatum*

hyperellum (Ach.) Ach. = *C. viride*

lentigerellum Tuck. = *C. lenticulare*

lichenoides (L.) Schumacher = *C. salicinum*

melanophaeum Sommerf. (Mohr 1901) = *Mycocalicium albonigrum*

microcephalum (Sm.) Ach. = *Sphinctrina anglica*

minutissimum G. Merr. = *Phaeocalicium minutissimum*

+parietinum Ach. (Claassen 1912) = *Mycocalicium subtile*

+populneum Brond. ex Duby = *Phaeocalicium populneum*

#pusillum auct. = *Chaenothecopsis pusilla*

pusiolum Ach. = *Chaenothecopsis pusiola*

queenslandiae (F. Wilson) Tibell = *C. chlorosporum*

ravenelii Tuck. = *Mycocalicium ravenelii*

roscidum (Ach.) Ach. nom. superfl. = *C. adpersum*

roscidum var. trabinellum (Ach.) Schaerer = *C. trabinellum* for North American records

sphaerocephalum (L.) Ach. = (?) *C. lichenoides*

#subpusillum Vainio = *Chaenothecopsis pusilla*

subquercinum Asahina = *C. lenticulare*

+subtile Pers. = *Mycocalicium subtile*

trachelinum Ach. = *C. salicinum*

turbinatum Pers. = *Sphinctrina turbinata*

CALLOME Otálora & Wedin (Otálora et al. 2014)

multipartita (Sm.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema multipartitum*

CALOGAYA Arup, Frödén & Söchting (Arup et al. 2013)

- arnoldii** (Wedd.) Arup, Frödén & Söchting Syn.: *Caloplaca arnoldii*, *C. arnoldii* subsp. *obliterata*
- biatorina** (A. Massal.) Arup, Frödén & Söchting Syn.: *Caloplaca biatorina*
- bryochryson** (Poelt) Vondrák Syns.: *Caloplaca alaskensis*, *C. bryochryson* (Vondrák et al. 2016)
- decipiens** (Arnold) Arup, Frödén & Söchting Syn.: *Caloplaca decipiens*
- lobulata** (Flörke) Arup, Frödén & Söchting Syn.: *Caloplaca lobulata*
- pusilla** (A. Massal.) Arup, Frödén & Söchting Syn.: *Caloplaca pusilla*
- alaskensis* (Wetmore) Arup, Frödén & Söchting = *C. bryochryson* (Vondrák et al. 2016)

CALOPADIA Vězda

- editae** Vězda ex Chaves & Lücking (Lücking et al. 2011b)
- floridana** Hodges & Lücking (Lücking et al. 2011b)
- fusca** (Müll. Arg.) Vězda Syn.: *Lopadium fuscum*
- imshaugii** Common & Lücking (Lücking et al. 2011b)
- lecanorella** (Nyl.) Kalb & Vězda (Lücking et al. 2011b)
- perpallida** (Nyl.) Vězda (Lücking et al. 2011b)
- puiggarii** (Müll. Arg.) Vězda Syn.: *Lopadium puiggarii*
- schomerae** F. Seavey & J. Seavey (Seavey & Seavey 2011)
- subcoerulescens** (Zahlbr.) Vězda (Lücking et al. 2011b)

CALOPLACA Th. Fr.

- adnexa** Vězda
- ahtii** Söchting
- albovariegata** (B. de Lesd.) Wetmore Syn.: *Pyrenodesmia albovariegata*
- alcarum** Poelt
- approximata** (Lynge) H. Magn.
- atroalba** (Tuck.) Zahlbr. Syn.: *Lecania perproxima* (van den Boom & Ryan 2004b)
- atrocyanescens** (Th. Fr.) H. Olivier (Spribille et al. 2010)
- atroflava** (Turner) Mong.
- atrosanguinea** (G. Merr.) I. M. Lamb Syns.: *Blastenia atrosanguinea*, *Lecanora atrosanguinea*
- borealis** (Vainio) Poelt
- brouardii** (B. de Lesd.) Zahlbr. (Nash et al. 1998)
- brunneola** Wetmore
- californica** Zahlbr.
- camptidia** (Tuck.) Zahlbr.
- carolinae** H. Magn.
- cascadensis** H. Magn.
- catalinae** H. Magn.
- celata** Th. Fr.
- cerina** (Ehrh. ex Hedwig) Th. Fr. (Laundon 2005)
- chlorina** (Flotow) Sandst.
- cinnabarina** (Ach.) Zahlbr.
- conversa** (Kremp.) Jatta
- dakotensis** Wetmore
- demissa** (Körber) Arup & Grube Syns.: *Lecanora demissa*, *L. incusa*, *L. subolivascens* (Arup & Grube 1999)
- diphasia** (Tuck.) Wetmore Syns.: *Lecanora diphasia*, *Blastenia diphasia*
- diphyodes** (Nyl.) Jatta Syn.: *Lecania arctica*
- dispersa** B. de Lesd.
- durietzii** H. Magn.
- epiphora** (Taylor) C. W. Dodge (Wetmore 2004a)
- *epithallina** Lynge
- erichansenii** S. Y. Kondr., A. Thell, Kärnefelt & Elix (Vondrák et al. 2011)
- erythrantha** (Tuck.) Zahlbr. (Wetmore 2007b)
- eugyra** (Tuck.) Zahlbr.
- exsecuta** (Nyl.) Dalla Torre & Sarnth.

ferrugineofusca (Vainio) H. Magn.
floridana (Tuck.) S. Tucker Syns.: *Blastenia floridana*, *Lecanora floridana*
fraudans (Th. Fr.) H. Olivier Syns.: *Blastenia fraudans*
fraxinea I. M. Lamb
fulvolutea (Arnold) Jatta (Thomson 1997)
granularis (Müll. Arg.) Zahlbr. (Wetmore 2004b)
***grimmiae** (Nyl.) H. Olivier
groenlandica Lynge
insularis Poelt
isidiigera Vězda (Šoun et al. 2011)
kamczatica (Savicz) Savicz (Søchting 2004)
lecanorae F. Seavey & J. Seavey (Seavey & Seavey 2012)
lecanoroides Lendemer (Lendemer et al. 2010)
lignicola Wetmore (Wetmore 2009)
lithophila H. Magn.
litoricola Brodo
livida (Hepp) Jatta
microphyllina (Tuck.) Hasse Syns.: *Placodium microphyllum*
[Pyrenodesmia montana B. de Lesd.]
neonii B. de Lesd.
neotropica Wetmore
nivalis (Körber) Th. Fr.
[Blastenia novomexicana Fink]
obamae K. Knudsen (Knudsen 2009)
obesimarginata Søchting (Søchting 2004)
oblongula (H. Magn.) Wetmore Syns.: *Apatopla oblongula*, *Lecidea oblongula*
obscura (J. Lahm) Th. Fr.
oleicola (J. Steiner) van den Boom & Breuss (Goward et al. 1996)
oregona H. Magn.
parvula Wetmore
peleophylla (Tuck.) Zahlbr.
pellodella (Nyl.) Hasse Syns.: *Pyrenodesmia elaeodes*
phaeocarpella (Nyl.) Zahlbr.
phyllidizans Wetmore (Wetmore 2003)
pinicola H. Magn.
pollinii (A. Massal.) Jatta
pratensis Wetmore (Wetmore 2009)
pygmaea Wetmore (Wetmore 2007a)
quercicola H. Magn.
reptans Lendemer & Hodgkinson (Hodgkinson & Lendemer 2012)
rubelliana (Ach.) Lojka
[Blastenia rubrofusca B. de Lesd.]
saxicola (Hoffm.) Nordin
schaererii (Flörke) Zahlbr.
schoeferi Poelt (Wetmore 2007a)
sibirica H. Magn. (Søchting & Olech 1995)
sideritis (Tuck.) Zahlbr.
sipeana H. Magn.
sonorae Wetmore (Wetmore 1996)
soralifera Vondrák & Hrouzek (Wetmore 2009)
sorocarpa (Vainio) Zahlbr.
spaldingii Zahlbr.
spitsbergensis H. Magn.
stanfordensis H. Magn.
stillicidiorum (Vahl) Lynge (Šoun et al. 2011, Arup et al. 2013)
subnitida (Malme) Zahlbr.

subpyraceella (Nyl.) Zahlbr.
tornoënsis H. Magn.
turkuensis (Vainio) Zahlbr. (Šoun et al. 2011)
ulcerosa Coppins & P. James (Wetmore 2004b)
ulmorum (Fink) Fink (Šoun et al. 2011) But see also Wetmore 2007b
urceolata B. de Lesd.
verrucosa Hasse
wetmorei Nimis, Poelt & Tretiach
wrightii (Tuck.) Fink
yuchiorum Lendemer & C. A. Morse (Lendemer & Morse 2010)
 alaskensis Wetmore (Wetmore 2004b) = *Calogaya bryochryson* (Vondrák et al. 2016)
 alboatra (Tuck.) Zahlbr. (Flowers 1953/1954) Misspelling of *C. atroalba*
 amabilis (Fink) Zahlbr. = *C. pellodella*
 ammiospila (Wahlenb.) H. Olivier = *Blastenia ammiospila*
 arenaria (Pers.) Müll. Arg. = *Rufoplaca arenaria*
 arizonica H. Magn. = *Gyalolechia epiphyta* (Vondrák et al. 2016)
 arizonica E. Rudolph non H. Magn. = *C. pellodella*
 arnoldii (Wedd.) Zahlbr. subsp. *obliterata* (Pers.) Gaya (Gaya 2009) = *Calogaya arnoldii*
 aurantia (Pers.) Hellbom = *Variospora aurantia*
 aurantiaca (Lightf.) Th. Fr. = *Gyalolechia flavorubescens*
 austrocitrina Vondrák, Říha, Arup & Söchting (Knudsen & Kocourková 2010e) = *Flavoplaca austrocitrina*
 biatorina (A. Massal.) J. Steiner (Gaya 2009) = *Calogaya biatorina*
 bolacina (Tuck.) Herre = *Polycauliona bolacina*
 bolanderi (Tuck.) H. Magn. = *Polycauliona luteominea* var. *bolanderi*
 bracteata (Hoffm.) Jatta = *Gyalolechia bracteata*
 brattiae W. A. Weber = *Polycauliona brattiae*
 bryochryson Poelt = *Gyalolechia bryochryson* (Vondrák et al. 2016)
 caesiorufa (Wibel) Flagey = removed as a *nomen confusum* (Wetmore 1996)
 caesiorufella (Nyl.) Zahlbr. = *C. phaeocarpella*
 callopisma (Ach.) Th. Fr. = *Variospora aurantia*
 castellana (Räsänen) Poelt If treated as separate from *C. invadens* (= *Pachypeltis invadens*) as done by e.g. Alstrup (1991), this species has not yet been reported for North America
 cerinelloides (Erichsen) Poelt (Qian & Klinka 1998) = *Athallia cerinelloides*
 chrysodeta (Vainio) Dombr. = *Leproplaca chrysodeta*
 chrysophthalma Degel. = *Solitaria chrysophthalma*
 cinnamomea (Th. Fr.) H. Olivier = *Blastenia ammiospila*
 cirrochroa (Ach.) Th. Fr. = *Leproplaca cirrochroa*
 citrina (Hoffm.) Th. Fr. = *Flavoplaca citrina*
 cladodes (Tuck.) Zahlbr. = *Pachypeltis cladodes*
 constipans (Nyl.) Zahlbr. = *Edrudia constipans*
 coralloides (Tuck.) Hulting = *Polycauliona coralloides*
 crenularia (With.) J. R. Laundon = *Blastenia crenularia*, but a misidentification for North America (Wetmore 1996)
 crenulatella (Nyl.) H. Olivier (Knudsen & La Doux 2005) = *Xanthocarpia crenulatella*
 decipiens (Arnold) Blomb. & Forssell = *Calogaya decipiens*
 diplacia (Ach.) Riddle = doesn't occur N of Mexico (Wetmore 1994)
 discernenda (Nyl.) Zahlbr. = *C. saxicola*
 discoidalis (Vainio) Lynge = *Blastenia ammiospila*
 discolor (Willey) Fink = *Gyalolechia xanthostigmoidea* (Wetmore 2001, Arup et al. 2013)
 elegans (Link) Th. Fr. = *Rusavskia elegans*
 epiphyta Lynge (Söchting & Tønsberg 1997) = *Gyalolechia epiphyta* (Vondrák et al. 2016)
 erythrella (Ach.) Kieffer = *Gyalolechia flavovirescens*
 feracissima H. Magn. = *Xanthocarpia feracissima*
 ferruginea (Hudson) Th. Fr. = *Blastenia ferruginea*
 festiva (Ach.) Zwackh = *Caloplaca crenularia*, but North American records incorrect according to

Wetmore (1996)
 flavocitrina (Nyl.) H. Olivier (Arup 2006) = *Flavoplaca flavocitrina*
 flavogranulosa Arup = *Polycauliona flavogranulosa*
 flavorubescens (Hudson) J. R. Laundon = *Gyalolechia flavorubescens*
 flavovirescens (Wulfen) Dalla Torre & Sarnth. = *Gyalolechia flavovirescens*
 fulgens (Sw.) Körber = *Gyalolechia fulgens*
 furfuracea H. Magn. (Wetmore 2004a) = *Blastenia furfuracea*
 galactophylla (Tuck.) Zahlbr. = *Squamulea galactophylla*
 gilva (Hoffm.) Zahlbr. = *C. cerina*
 glorieae sensu Aptroot (1996) non Werner & Llimona = *Polycauliona verruculifera* (Arup 1997)
 granulosa (Müll. Arg.) Jatta = *Flavoplaca granulosa*
 herbidella (Hue) H. Magn. = *Blastenia herbidella*, but a misidentification for North America (Wetmore 2004a)
 herrei Hasse = *C. atrosanguinea*
 holocarpa (Hoffm. ex Ach.) A. E. Wade = *Athallia holocarpa*
 ignea Arup = *Polycauliona ignea*
 impolita Arup = *Polycauliona impolita*
 inconspicua Arup = *Polycauliona inconspicua*
 intermedia (B. de Lesd.) Zahlbr. = *C. cinnabarina* (Wetmore & Kärnefelt 1999)
 invadens Lynge (Thomson 1997) = *Pachypeltis invadens*
 irrubescens (Arnold) Zahlbr. = *Squamulea subsoluta*
 jungermanniae (Vahl) Th. Fr. = *Bryoplaca jungermanniae*
 lactea (A. Massal.) Zahlbr. = *Xanthocarpia lactea*
 laeta H. Magn. = *Polycauliona luteominia* var. *luteominia*
 lamprocheila (DC.) Flagey = *Rufoplaca arenaria*
 leucoraea (Ach. ex Flörke) Branth = *Bryoplaca sinapisperma*
 lobulata (Flörke) B. de Lesd. = *Calogaya lobulata*
 ludificans Arup = *Polycauliona ludificans*
 luteoalba (Turner) Th. Fr. = *Cerothallia luteoalba*
 luteominia (Tuck.) Zahlbr. var. *luteominia* = *Polycauliona luteominia* var. *luteominia*
 luteominia var. *bolanderi* (Tuck.) Arup = *Polycauliona luteominia* var. *bolanderi*
 marina (Wedd.) Zahlbr. subsp. *americana* Arup = *Flavoplaca marina*
 marmorata (Bagl.) Jatta (Knudsen & La Doux 2005) = *Xanthocarpia marmorata*
 microthallina (Wedd.) Zahlbr. = *Flavoplaca microthallina*
 modesta (Zahlbr.) Fink = *Squamulea subsoluta*
 murorum (Hoffm.) Th. Fr. = *C. saxicola*
 nashii Nav.-Ros., Gaya & Hladun (Knudsen & La Doux 2005) = *Polycauliona nashii*
 obliterans (Nyl.) Blomb. & Forssell = *Leproplaca obliterans*
 oxfordensis Fink = *Rufoplaca oxfordensis*
 parviloba Wetmore (Wetmore 2003) = *Squamulea parviloba*
 paulsenii (Vainio) Zahlbr. = misidentification for North America
 persimilis Wetmore (Wetmore 2004b) = *Gyalolechia persimilis*
 phlogina (Ach.) Flagey (Richardson et al. 2009, Vondrák et al. 2010) = *Polycauliona phlogina*
 pusilla (A. Massal.) Zahlbr. (Gaya 2009) = *Calogaya pusilla*
 pyracea (Ach.) Zwackh (Arup 2009) = *Athallia pyracea*
 rosei Hasse = *Polycauliona rosei*
 sarcopisioides (Körber) Zahlbr. = *C. obscurella*
 saxifragarum Poelt = *Athallia saxifragarum*
 scopularis (Nyl.) Lettau = *Athallia scopularis*
 scotoplaca (Nyl.) H. Magn. = misidentification for North America (Wetmore 1996)
 sinapisperma (Lam. & DC.) Maheu & A. Gillet = *Bryoplaca sinapisperma*
 soorediata (Vainio) Du Rietz = *Rusavskia soorediata*
 splendens (Darb.) Zahlbr. = *Rusavskia elegans*
 squamosa (B. de Lesd.) Zahlbr. = *Squamulea squamosa*
 stantonii W. A. Weber ex Arup = *Gyalolechia stantonii*
 stellata Wetmore & Kärnefelt (Wetmore & Kärnefelt 1998) = *Polycauliona stellata*

stipitata Wetmore (Wetmore 1999) = *Gyalolechia stipitata*
 submexicana (B. de Lesd.) Zahlbr. = *Candelina submexicana*
 subnigricans H. Magn. = *C. atrosanguinea*
 subolivacea (Th. Fr.) Lynge = *Parvoplaca tirolensis*
 subsoluta (Nyl.) Zahlbr. (Wetmore 2003) = *Squamulea subsoluta*
 teicholyta (Ach.) J. Steiner = misidentification for North America (Wetmore 1996)
 tetraspora (Nyl.) H. Olivier = *Bryoplaca tetraspora*
 texana Wetmore & Kärnefelt (Wetmore & Kärnefelt 1998) = *Wetmoreana texana*
 thallincola (Wedd.) Du Rietz Not in North America
 tirolensis Zahlbr. = *Parvoplaca tirolensis*
 tominii (Savicz) Ahlner (Wetmore 2001) = *Xanthocarpia tominii*
 trachyphylla (Tuck.) Zahlbr. = *Xanthomendoza trachyphylla*
 variabilis (Pers.) Müll. Arg. = *Pyrenodesmia variabilis*
 velana (A. Massal.) Du Rietz = *Variospora velana*
 verruculifera (Vainio) Zahlbr. = *Polycauliona verruculifera*
 vicaria H. Magn. = *C. kamczatica*
 vitellinula (Nyl.) H. Olivier = *Athallia vitellinula*
 xanthostigmoidea (Räsänen) Zahlbr. = *Gyalolechia xanthostigmoidea*

CALOPLACOPSIS (Zahlbr.) B. de Lesd. = **CANDELARIELLA**
 submexicana (B. de Lesd.) B. de Lesd. = *Candelina submexicana*

CALVITIMELA Hafellner (Hafellner & Türk 2001)
aglaea (Sommerf.) Hafellner Syn.: *Lecidea aglaea*, *L. aglaeida* (Hertel & Andreev 2003), *L. shushanii*, *Tephromela aglaea*, *T. aglaeida*
armeniaca (DC.) Hafellner Syn.: *Lecidea armeniaca*, *Tephromela armeniaca*
melaleuca (Sommerf.) R. Sant. (Spribille et al. 2011, Dillman et al. 2012)
perlata (Haugan & Timdal) R. Sant. (Bendiksby et al. 2015)
talayana (Haugan & Timdal) Andreev (Hodkinson et al. 2009)
testaceoatra (Vainio) Hafellner Syn.: *Lecidea testaceoatra*, *L. arctogena*, *Tephromela testaceoatra*

CAMPYLOTHELIUM Müll. Arg.
 amylosporum (Vainio) R. C. Harris = *Polymeridium proponens*
 nitidum Zahlbr. = *Laurera megasperma*

CANDELARIA A. Massal.
concolor (Dickson) Stein
fibrosa (Fr.) Müll. Arg.
pacifica M. Westb. & Arup (Westberg & Arup 2011)
 concolor var. *effusa* (Tuck.) G. Merr. & Burnham = *C. concolor* (Lendemer & Westberg 2010)

CANDELARIELLA Müll. Arg.
aggregata M. Westb. (Westberg 2007a)
antennaria Räsänen
arctica (Körber) R. Sant.
aurella (Hoffm.) Zahlbr.
biatorina M. Westb. (Westberg 2007c)
borealis M. Westb. (Westberg 2007b)
californica M. Westb. (Westberg 2007a)
canadensis H. Magn.
citrina B. de Lesd.
clarkii E. Tripp & Lendemer (Tripp & Lendemer 2015)
complanata M. Westb. (Westberg 2007a)
coralliza (Nyl.) H. Magn.
corviniscalensis C. A. Morse & M. Westb. (Westberg et al. 2011b)
deppeanae M. Westb. (Westberg 2007a)

efflorescens R. C. Harris & W. R. Buck
granuliformis M. Westb. (Westberg et al. 2011b)
immarginata M. Westb. (Westberg 2007a)
kansuensis H. Magn. (Westberg 2007a)
lutella (Vainio) Räsänen
minuta Reichert & Galun (Weber & Wittman 2000)
placodizans (Nyl.) H. Magn.
rosulans (Müll. Arg.) Zahlbr.
spraguei (Tuck.) Zahlbr.
subdeflexa (Nyl.) Lettau
vitellina (Hoffm.) Müll. Arg.
xanthostigma (Ach.) Lettau
xanthostigmoides (Müll. Arg.) R. W. Rogers (Lendemer & Westberg 2010)
 athallina (Wedd.) Du Rietz Excluded from North America (Westberg et al. (2011b)
 cerinella (Flörke) Zahlbr. = *C. aurella*
 corallizoides M. Westb. Erroneously listed here; reported only from Mexico (Westberg 2007a)
 crenulata (Wahlenb.) Zahlbr. = *C. arctica*
 deflexa (Nyl.) Zahlbr. = *C. aurella*, but N. American reports are mostly *C. antennaria* (Westberg 2007a)
 dispersa (Räsänen) Hakul. Excluded from North America (Westberg et al. 2011b)
 epixantha auct. = *C. aurella*
 epixantha (Ach.) Sandst. = *Candelariella aurella*
 holophaea (Mont.) Zahlbr. = *Solenopsora holophaea*
 hudsonica Hakul. = *C. canadensis*
 kuusamoensis Räsänen var. *areolata* Hakul. Excluded from North America (Westberg et al. 2011b)
 luteoalba (Turner) Lettau = *Cerothallia luteoalba*
 medians (Nyl.) Sm. North American reports probably refer to *Candelina submexicana*
 plumbea Poelt & Vězda Excluded from North America (Westberg et al. 2011b)
 reflexa (Nyl.) Lettau = misidentification for North America (Westberg et al. 2007)
 stenospora B. de Lesd. Excluded from North America (Westberg et al. 2011b)
 submexicana B. de Lesd. = *Candelina submexicana*
 terrigena Räsänen = *C. citrina* (Westberg 2007a, Westberg 2009)

CANDELINA Poelt

mexicana (B. de Lesd.) Poelt
submexicana (B. de Lesd.) Poelt Syns.: *Caloplacopsis submexicana*, *Candelariella submexicana*, *Caloplaca submexicana*. North American reports of *Candelariella medians* (Nyl.) Sm. probably belong here.

CANOMACULINA Elix & Hale = **PARMOTREMA** (Blanco et al. 2005)

conferenda (Hale) Elix = *Parmotrema conferendum*
 haitiensis (Hale) Elix = *Parmotrema haitiensis*
 neotropica (Kurok.) Elix = *Parmotrema neotropicum*
 subsumpta (Nyl.) Elix = *Parmotrema subsumptum*
 subtinctoria (Zahlbr.) Elix = *Parmotrema subtinctorium*

CANOPARMELIA Elix & Hale

alabamensis (Hale & McCull.) Elix (Elix 2001) Syns: *Paraparmelia alabamensis*, *Parmelia alabamensis*, *Pseudoparmelia alabamensis*
amazonica (Nyl.) Elix & Hale Syns.: *Parmelia amazonica*, *Pseudoparmelia amazonica*
caroliniana (Nyl.) Elix & Hale Syns.: *Parmelia caroliniana*, *Pseudoparmelia caroliniana*
cryptochlorophaea (Hale) Elix & Hale Syns.: *Parmelia cryptochlorophaea*, *Pseudoparmelia cryptochlorophaea*
martinicana (Nyl.) Elix & Hale Syns.: *Parmelia martinicana*, *Pseudoparmelia martinicana*
salacinifera (Hale) Elix & Hale Syns.: *Parmelia salacinifera*, *Pseudoparmelia salacinifera*
texana (Tuck.) Elix & Hale Syns.: *Parmelia texana*, *Pseudoparmelia texana*

amabilis Heiman & Elix (Heiman & Elix 1999) = Canoparmelia caroliniana (Lendemer & Ruiz 2015)
crozalsiana (B. de Lesd. ex Harm.) Elix & Hale = Crespoa crozalsiana

CAPRONIA Sacc.

***thamnoliae** Zhurb. (Zhurbenko 2012)

***peltigerae** (Fuckel) D. Hawksw. (Zhurbenko & Laursen 2003) = Knufia peltigerae (Réblová et al. 2013)

CARBACANTHOGRAPHIS Staiger & Kalb (Staiger 2002)

candidata (Nyl.) Staiger & Kalb Syn.: Graphis candidata (Staiger 2002)

marcescens (Fée) Staiger & Kalb Syn.: Graphina marcescens, G. plittii, Graphis marcescens (Staiger 2002)

muriformis E. Tripp & Lendemer (Tripp et al. 2010)

CARBONEA (Hertel) Hertel

***aggregantula** (Müll. Arg.) Diederich & Triebel (Goward et al. 1996)

assimilis (Körber) Hafellner & Hertel Syn.: Lecidea assimilis

atronivea (Arnold) Hertel Syn.: Lecidea atronivea

***intrudens** (H. Magn.) Hafellner (Dillman et al. 2012) Syn.: Lecidea intrudens

latypizodes (Nyl.) Knoph & Rambold (Knoph et al. 2004) Syns.: Lecidea austrocalifornica, L. subplebeia (Knudsen et al. 2008b), L. subcontinuior, L. amabilis, Mycobilimbia austrocalifornica

***supersparsa** (Nyl.) Hertel (Diederich 2003)

***vitellinaria** (Nyl.) Hertel Syn.: Lecidea vitellinaria

vorticosa (Flörke) Hertel Syn.: Lecidea vorticosa

intrusa (Th. Fr.) Rambold & Triebel (Hinds et al. 2002) = Scoliciosporum intrusum

CARBONICOLA Bendiksby & Timdal (Bendiksby & Timdal 2013)

anthracophila (Nyl.) Bendiksby & Timdal Syns.: Biatora anthracophila, Hypocenomyce anthracophila, Lecidea anthracophila, Psora anthracophila

myrmecina (Ach.) Bendiksby & Timdal Syn.: Hypocenomyce castaneocinerea

CATAPYRENIUM Flotow (Breuss 1996)

cinereum (Pers.) Körber Syn.: Dermatocarpon cinereum, D. hepaticum

daedaleum (Kremp.) Stein Syn.: Dermatocarpon daedaleum

globosum J. W. Thomson

granulosum (B. de Lesd.) J. W. Thomson Syns.: Endopyrenium crustaceum, E. granulosum, Dermatocarpon granulosum

psoromoides (Borrer) R. Sant.

squamellum (Nyl. ex Hasse) J. W. Thomson Syn.: Dermatocarpon squamellum

acarosporoides (Zahlbr.) J. W. Thomson = Placidium acarosporoides

andicolum Breuss = Placidium andicola

caeruleopulvinum J. W. Thomson = Placopyrenium caeruleopulvinum

chilense (Räsänen) Breuss = Placidium chilense

#**compactum** (A. Massal.) R. Sant. = Heteroplacidium compacta

congestum Breuss & McCune = Heteroplacidium congestum

heppioides (Zahlbr.) J. W. Thomson = Placopyrenium heppioides

lachneum (Ach.) R. Sant. = Placidium lachneum

lacinulatum (Ach.) Breuss = Clavascidium lacinulatum

michelii (A. Massal.) R. Sant. = Placidium michelii

norvegicum Breuss = Placidium norvegicum

plumbeum (B. de Lesd.) J. W. Thomson (p.p.) = Verrucaria inficiens (Breuss 1998)

podolepis Breuss = Placidium podolepis

rufescens (Ach.) Breuss = Placidium rufescens

schaereri (Fr.) R. Sant. = Placopyrenium coloradoense for North American reports

squamulosum (Ach.) Breuss = Placidium squamulosum

tuckermanii (Rav. ex Mont.) J. W. Thomson = Placidium arboreum

umbrinum Breuss = Clavascidium umbrinum
waltheri (Kremp.) Körber = Involucropyrenium waltheri
zahlbruckneri (Hasse) J. W. Thomson = Placopyrenium stanfordii

CATILLARIA A. Massal.

atomarioides (Müll. Arg.) H. Kiliás (Kocourková et al. 2010)
chalybeia (Borrer) A. Massal.
contristans (Nyl.) Zahlbr. (Miller et al. 2005)
cupressi Zahlbr.
erysiboides (Nyl.) Th. Fr. Syn.: Arthonia carneorufa (Printzen & Tønsberg 1999)
flavens (Willey) Fink
glauconigrans (Tuck.) Hasse
lenticularis (Ach.) Th. Fr.
***lobariicola** (Alstrup) Coppins & Aptroot (Spribill et al. 20120)
muscicola Lynge
nigroclavata (Nyl.) Schuler Syn.: Bacidia declinis, Bilimbia declinis, Lecidea declinis
picila (A. Massal.) Coppins (McCune & Rosentreter 2014)
***stereocaulorum** (Th. Fr.) H. Olivier (Zhurbenko 2010)
subnegans (Nyl.) Boistel
subviridis (Nyl.) Zahlbr.
terrena (Willey) Zahlbr.
arctica Lynge = Toninia philippea
athallina (Hepp) Hellbom = Toninia athallina
atropurpurea (Schaerer) Th. Fr. = Catinaria atropurpurea
bahusiensis (Blomb.) Th. Fr. = Tylothallia biformigera
biformigera (Leighton) H. Magn. = Tylothallia biformigera
bouteillei (Desm.) Zahlbr. = Fellhanera bouteillei
columbiana (G. Merr.) W. Noble = Megalaria columbiana
crystallifera R. Kiliás = Toninia lutosa
endochroma(Fée) Zahlbr. = Catillochroma endochroma
franciscana (Tuck.) Herre = Lecania franciscana
globulosa (Flörke) Th. Fr. = Biatora globulosa
graniformis (K. G. Hagen) Vainio = Cliostomum corrugatum
griffithii (Sm.) Malme = Cliostomum griffithii
groenlandica Lynge = a Lecania sp.
grossa (Pers. ex Nyl.) Körber = Megalaria grossa
***heerii** (Hepp) H. Olivier = Scutula heerii
***herrii** (Hepp) Fink (Fink 1935) Orthographic variant for C. heerii
jemtlandica Th. Fr. & Almq. = Megalaria jemtlandica
kansuensis H. Magn. = Toninia philippea
laureri Hepp ex Th. Fr. = Megalaria laureri
leptocheila (Tuck.) Riddle = Megalaria leptocheila
micrococca (Körber) Th. Fr. = Micarea micrococca (Fryday & Coppins 2007)
philippea (Mont.) A. Massal. = Toninia philippea (Thomson 1997)
prasina (Fr.) Th. Fr. = Micarea prasina
pulverea (Borrer) Lettau = Megalaria pulverea
schaereri (Fr.) R. Sant. = Placocarpus schaeferi, but a misidentification for N.A. (McCune et al. 2014b)
sculpturata H. Magn. = Toninia sculpturata
sphaeroides (A. Massal.) Schuler = Mycobilimbia pilularis
subnitida Hellbom = Toninia subnitida
subnigrata (Nyl.) Blomb. & Forssell = a European species
superflua (Müll. Arg.) Zahlbr. = ?Megalaria grossa (Printzen 1995)
tricolor auct. = Cliostomum griffithii
tristis (Müll. Arg.) Arnold = Toninia subnitida

CATILLOCHROMA Kalb (Kalb 2007)

endochromum (Fée) Kalb (Lücking et al. 2011b) Syn.: *Catillaria endochroma*
albocinctum (Degel.) Kalb = *Megalaria albocincta* (Fryday & Lendemer 2010)
leptocheilum (Tuck.) Kalb = *Megalaria leptocheila* (Fryday & Lendemer 2010)

CATINARIA Vainio

atropurpurea (Schaerer) Vězda & Poelt Syns.: *Biatora atropurpurea*, *Catillaria atropurpurea*
brodoana R. C. Harris & W. R. Buck (Lendemer et al. 2016a)
radulae R. C. Harris & W. R. Buck (Lendemer et al. 2016a)
subcorallina (Zahlbr.) Brako Syn.: *Phyllopsora subcorallina*
albocincta Degel. = *Megalaria albocincta*
grossa (Pers. ex Nyl.) Vainio = *Megalaria grossa*
laureri (Hepp ex Th. Fr.) Degel. = *Megalaria laureri*
leucoplaca auct. = *Megalaria grossa*
versicolor (Fée) Sipman = *Megalaria versicolor*

CATOLECHIA Flotow

wahlenbergii (Ach.) Körber Syns.: *Buellia wahlenbergii*, *B. pulchella*

CAVERNULARIA Degel. = **HYPOGYMNIA** (Miądlikowska et al. 2011)

hultenii Degel. = *Hypogymnia hultenii*
lophyrea (Ach.) Degel. = *Hypogymnia lophyrea*

CECIDONIA Triebel & Rambold

***umbonella** (Nyl.) Triebel & Rambold Syn.: *Lecidea umbonella*
***xenophana** (Körber) Triebel & Rambold (Hinds et al. 2002) Syn.: *Lecidea columnata* (Coppins & Fryday 2006b)

CELIDIUM Tul. = **ARTHONIA**

***varians** Arnold = *Arthonia varians* (Hawksworth 2003)

CELOTHELIUM A. Massal. (Harris 1995a)

aciculiferum (Nyl.) Vainio (Harris 1995a)

CEPHALOPHYSIS (Hertel) H. Kilius

leucospila (Anzi) H. Kilius & Scheid. Syn.: *Lecidea ultima*

CERCIDOSPORA Körber

***caudata** Kernst. (Navarro-Rosinés et al. 2004)
***cecidiiformans** Grube & Hafellner (Hafellner et al. 2002, Spribille et al. 2010)
***cladoniicola** Alstrup (Lendemer et al. 2008c)
#**decolorella** (Nyl.) O. E. Erikss. & J. Z. Yue
***epicarphinea** (Nyl.) Grube & Hafellner
***epipolytropa** (Mudd) Arnold
***exiguella** (Nyl.) Arnold (Spribille et al. 2010)
***lobothalliae** Nav.-Ros. & Calat. (Navarro-Rosinés et al. 2004)
***macrospora** (Uloth) Hafellner & Nav.-Ros. (Navarro-Rosinés et al. 2004)
***ochrolechia** Zhurb. (Zhurbenko 2013)
***punctillata** (Nyl.) R. Sant. (Zhurbenko 2013)
***soror** Obermayer & Triebel (McCune & Ponzetti 2005)
***stereocaulorum** (Arnold) Hafellner (Alstrup & Cole 1998)
***thamnoliae** Zhurb. (Zhurbenko 2012)
***verrucosaria** (Lindsay) Arnold (Navarro-Rosinés et al. 2004)
***xanthoriae** (Wedd.) R. Sant. (Knudsen & Lendemer 2006)
***ulothii** Körber = *C. macrospora* (Navarro-Rosinés & Hafellner 2004)

CEROTHALLIA Arup, Frödén & Søchting (Arup et al. 2013)

luteoalba (Turner) Arup, Frödén & Søchting Syn.: *Caloplaca luteoalba*

CETRADONIA J.-C. Wei & Ahti (Wei & Ahti 2002)

linearis (Evans) J.-C. Wei & Ahti Syn.: *Gymnoderma linearis*, *Cladonia linearis*

CETRARIA Ach.

aculeata (Schreber) Fr. Syns.: *Coelocaulon aculeatum*, *Cornicularia aculeata*

arenaria Kärnefelt

ericetorum Opiz subsp. **ericetorum**

ericetorum subsp. **reticulata** (Räsänen) Kärnefelt

islandica (L.) Ach. subsp. **islandica**

islandica subsp. **crispiformis** (Räsänen) Kärnefelt

islandica subsp. **orientalis** (Asahina) Kärnefelt

kamczatica Savicz

laevigata Rass.

muricata (Ach.) Eckfeldt Syn.: *Coelocaulon muricatum*

nigricans Nyl.

odontella (Ach.) Ach. Syns.: *Cornicularia odontella*, *Coelocaulon odontellum*

agnata (Nyl.) Kristinsson = *Melanelia agnata*

alaskana W. L. Culb. & C. F. Culb. = *Cetrelia alaskana*

andrejevii Oxner = *Arctocetraria andrejevii*

arborialis (Zahlbr.) Howard = *Tuckermannopsis subalpina*

atlantica (Tuck.) Du Rietz = *Platismatia tuckermanii*

aurescens Tuck. = *Ahtiana aurescens*

californica Tuck. = *Kaernefeltia californica*

canadensis (Räsänen) Räsänen = *Vulpicida canadensis*

chicitae W. L. Culb. = *Cetrelia chicitae*

chlorophylla (Willd.) Vainio = *Tuckermannopsis chlorophylla*

chrysantha Tuck. = *Asahinea chrysantha*

ciliaris Ach. = *Tuckermannopsis ciliaris*

ciliaris Ach. var. **halei** (W. L. Culb. & C. F. Culb.) Ahti = *Tuckermannopsis americana*

commixta (Nyl.) Th. Fr. = *Cetrariella commixta*

coralligera (W. A. Weber) Hale = *Tuckermanella coralligera*

crispa (Ach.) Nyl. = *C. ericetorum* subsp. *ericetorum*

cucullata (Bellardi) Ach. = *Flavocetraria cucullata*

culbersonii Hale = *Melanelia culbersonii*

delisei (Bory ex Schaerer) Nyl. = *Cetrariella delisei*

elenkinii Krog = *Arctocetraria nigricascens*

fahlunensis (L.) Schreber = *Cetrariella commixta*

fastigiata (Delise ex Nyl.) Kärnefelt = *Cetrariella fastigiata*

fendleri (Nyl.) Tuck. = *Tuckermanella fendleri*

glauca (L.) Ach. = *Platismatia glauca*

halei W. L. Culb. & C. F. Culb. = *Tuckermannopsis americana*

hepatizon (Ach.) Vainio = *Melanelia hepatizon*

herrei Imshaug = *Platismatia herrei*

hiascens (Fr.) Th. Fr. = *Cetrariella delisei*

idahoensis Essl. = *Esslingeriana idahoensis*

inermis (Nyl.) Krog = *Masonhalea inermis*

juniperina (L.) Ach. = Old North American records are *Vulpicida canadensis* or *V. viridis*

juniperina var. **jerseyi** Gyelnik (Gyelnik 1931) = *V. viridis*

lacunosa Ach. = *Platismatia lacunosa*

lacunosa Ach. var. **atlantica** Tuck. = *Platismatia tuckermanii*

merrillii Du Rietz = *Kaernefeltia merrillii*

nigricascens (Nyl.) Elenkin = *Arctocetraria nigricascens*

nivalis (L.) Ach. = *Flavocetraria nivalis*

norvegica (Lyng.) Du Rietz = *Platismatia norvegica*
 oakesiana Tuck. = *Usnocetraria oakesiana*
 orbata (Nyl.) Fink = *Tuckermannopsis orbata*
 pallidula Tuck. ex Riddle = *Ahtiana pallidula*
 pinastri (Scop.) Gray = *Vulpicida pinastri*
 platyphylla Tuck. = *Tuckermannopsis platyphylla*
 polyschiza (Nyl.) Jatta = *Melanelia hepatizon*
 richardsonii Hooker = *Masonhalea richardsonii*
 scholanderi Llano = *Asahinea scholanderi*
 scutata (Wulfen) Poetsch = *Tuckermannopsis sepincola*
 scutata auct. = *Tuckermannopsis chlorophylla*
 sepincola (Ehrh.) Ach. = *Tuckermannopsis sepincola*
 sibirica H. Magn. = *Arctocetraria nigricascens*
 simmonsii Krog = *Arctocetraria andrejevii*
 stenophylla (Tuck.) G. Merr. = *Platismatia stenophylla*
 subalpina Imshaug = *Tuckermannopsis subalpina*
 tilesii Ach. = *Vulpicida juniperina* (Saag et al. 2014)
 tristis (Weber ex F. H. Wigg.) Fr. = *Cornicularia normoerica* (Santesson et al. 2004)
 tuckermanii Oakes non Herre = *Platismatia tuckermanii*
 tuckermanii Herre non Oakes = *Platismatia herrei*
 viridis Schwein. = *Vulpicida viridis*
 weberi Essl. = *Tuckermanella weberi*

CETRARIASTRUM Sipman = *HYPOTRACHYNA* (Divakar et al. 2013)
 catawbiense (Degel.) W. L. Culb. & C. F. Culb. = *Hypotrachyna catawbiensis*

CETRARIELLA Kärnefelt & A. Thell

commixta (Nyl.) A. Thell & Kärnefelt (Thell et al. 2009) Syns.: *Cetraria commixta*, *C. fahlunensis*, *Melanelia commixta*
delisei (Schaerer) Kärnefelt & A. Thell Syn.: *Cetraria delisei*, *C. hiascens*
fastigiata (Nyl.) Kärnefelt & A. Thell Syn.: *Cetraria fastigiata*

CETRELIA W. L. Culb. & C. F. Culb.

alaskana (C. F. Culb. & W. L. Culb.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria alaskana*
cetrarioides (Duby) W. L. Culb. & C. F. Culb.
chicita (W. L. Culb.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria chicitae*
monachorum (Zahlbr.) W. L. Culb. & C. F. Culb.
olivetorum (Nyl.) W. L. Culb. & C. F. Culb. Syns.: *Parmelia olivetorum*, *P. olivaria*

CHAENOTHECA Th. Fr.

balsamconensis J. L. Allen & McMullin (Allen & McMullin 2015)
brachypoda (Ach.) Tibell Syn.: *Coniocybe sulphurea*
brunneola (Ach.) Müll. Arg.
chlorella (Ach.) Müll. Arg.
chrysocephala (Ach.) Th. Fr. Syn.: *Coniocybe gracilescens*
cinerea (Pers.) Tibell
erkahomattiorum Selva (Selva 2013)
ferruginea (Turner ex Sm.) Mig.
floridana R. C. Harris (Harris 1995a)
furfuracea (L.) Tibell Syn.: *Coniocybe furfuracea*
gracilenta (Ach.) J.-E. Mattsson & Middelb. Syn.: *Cybebe gracilenta* (Tibell 2001)
gracillima (Vainio) Tibell Syn.: *Coniocybe gracillima*
hispidula (Ach.) Zahlbr.
hygrophila Tibell (Selva & Tibell 1999)
laevigata Nádv.
nitidula Tibell (Tibell & Koffman 2002)

olivaceorufa Vainio (Rikkinen 1998)
phaeocephala (Turner) Th. Fr.
servitii Nád. (Selva & Tibell 1999)
sphaerocephala Nád. (Selva & Tibell 1999)
stemonea (Ach.) Müll. Arg.
subroscida (Eitner) Zahlbr.
trichialis (Ach.) Th. Fr.
xyloxena Nád.
 carthusiae (Harm.) Lettau = C. chlorella
 melanophaea (Ach.) Zwackh = C. ferruginea
 savonica (Räsänen) Tibell = Chaenothecopsis savonica
 schaereri (De Not.) Zahlbr. = C. cinerea
 sulphurea (Retz.) Middleborg & J.-E. Mattsson = C. brachypoda
 trichialis var. cinerea (Pers.) Blomb. & Forssell = C. cinerea

CHAENOTHECOPSIS Vainio

amurensis Titov (Selva 2013)
 ***arthoniae** Tibell (Dillman et al. 2012)
 +**asperopoda** Titov (Selva & Tibell 1999)
 ***australis** Tibell (Selva 2014)
 ***brevipes** Tibell
 ***consociata** (Nád.) A.F.W. Schmidt
 +**debilis** (Turner & Borrer ex Sm.) Tibell
 +**diabolica** Rikkinen & Tuovila (Tuovila et al. 2011, 2012)
 ***dibbleandersoniarum** Selva (Selva 2013)
 +**dolichocephala** Titov (Selva 2010)
 +**edbergii** Selva & Tibell (Selva & Tibell 1999)
 ***epithallina** Tibell
 +**exilis** Tibell (Selva & Tibell 1999)
 +**fennica** (Laurila) Tibell (Selva 2014)
 +**haematopus** Tibell (Selva & Tibell 1999)
 +**irregularis** Titov (Selva & Tibell 1999)
 ***kalbii** Tibell & K. Ryman (Lendemer et al. 2008c)
 +**marcineae** Selva (Selva 2013)
 +**montana** Rikkinen (Rikkinen 2003b)
 +**nana** Tibell
 ***nigra** Tibell (Harris & Lendemer 2005, Spribille & Björk 2008)
 +**nigripunctata** Rikkinen (Rikkinen 2003a)
 +**norstictica** R. C. Harris (Harris 1995a)
 +**oregana** Rikkinen (Rikkinen 2003b, Tuovila et al., 2011, 2012)
 ***ochroleuca** (Körber) Tibell & K. Ryman (Selva & Tibell 1999)
 ***pilosa** Tibell & Kalb (Harris 1995a)
 #**pusilla** (Ach.) A.F.W. Schmidt Syn.: Calicium pusillum, C. floerkei, C. subpusillum, C. asikkalense
 #**pusiola** (Ach.) Vainio Syn.: Calicium pusiolum, Mycocalicium pusiolum
 +**rappii** (Nád.) R. C. Harris (Harris 1995a) Syn.: Mycocalicium rappii
 +**resinicola** Tibell & Titov (Selva 2010)
 +**rubescens** Vainio
 ***rubina** Tibell (Peterson & Rikkinen 1999)
 +**savonica** (Räsänen) Tibell Syn.: Mycocalicium savonicum, Chaenotheca savonica
 +**sitchensis** Rikkinen (Rikkinen 1999)
 ***subparoica** (Nyl.) Tibell (Peterson & Rikkinen 1999)
 +**tasmanica** Tibell (Selva & Tibell 1999)
 +**tsugae** Rikkinen (Rikkinen 1999)
 +**ussuriensis** Titov (Peterson & Rikkinen 1999)
 ***viridialba** (Kremp.) A.F.W. Schmidt
 #**viridireagens** (Nád.) A.F.W. Schmidt

- #*lignicola* (Nádv.) A.F.W. Schmidt = *C. pusiola*
 #*subpusilla* (Vainio) Tibell = *C. pusilla*
 +*thujae* Rikkinen (Selva & Tibell 1999) = *C. tsugae* (Selva 2010)
 +*zebrina* Rikkinen & Tuovila (Tuovila et al. 2011) = *C. oregana* (Tuovila et al. 2012)

CHALARA (Corda) P. A. Saccardo

- ***lobariae** Etayo (Zhurbenko & Dillman 2010)

CHAPSA A. Massal. (Frisch 2006)

- alborosella** (Nyl.) A. Frisch Syns.: *Ocellularia alborosella*, *Thelotrema alborosellum* (Frisch 2006)
chionostoma (Nyl.) Rivas Plata & Mangold (Lücking et al. 2011b)
leprocarpa (Nyl.) A. Frisch Syns.: *Graphina leptocarpa*, *Thelotrema leptocarpum* (Frisch 2006)
platycarpa (Tuck.) A. Frisch Syns.: *Thelotrema platycarpoides*, *T. platycarpum* (Frisch 2006)
platycarpoides (Tuck.) Breuss & Lücking (Lücking et al. 2011b)
subpatens (Hale) Mangold (Lücking et al. 2011b)

CHEIROMYCINA B. Sutton

- flabelliformis** B. Sutton (Tønsberg 2002)

CHIODECTON Ach.

- malmei** Thor
ochroleucum Zahlbr. = *Paraschismatomma ochroleucum* (Ertz & Tehler 2011)
californicum Tuck. = *Schizopelte crustosa* (Ertz & Tehler 2011)
inscriptum (Nyl.) Fink = *Sclerophyton inscriptum*
montagnaei auct. N.A. = *Cryptothecia striata*
perplexum Nyl. = *Syncesia graphica* (Tehler 1996)
rubrocinctum (Ehrenb. : Fr.) Nyl. = *Herpothallon rubrocinctum*
sanguineum (Sw.) Vainio = *Herpothallon rubrocinctum*
sphaerale Ach. = misidentification for North America (Harris 1995a)
subochroleucum Fink = *Dendrographa franciscana* (Kocourková et al. 2010; Ertz & Tehler 2011)

CHIONOSPHERA Cox

- **apobasidialis* Cox (According to Diederich [1996, and pers. comm.], only non-lichenicolous specimens are known for North America, and the lichenicolous specimens from Europe may represent a distinct species.)

CHRISMOFULVEA Marbach

- dialyta** (Nyl.) Marbach Syn.: *Buellia dialyta* (Marbach 2000)
pinastri (Erichsen) Marbach Syn.: *Buellia pinastri* (Marbach 2000)
rubifaciens (R. C. Harris) Marbach Syn.: *Buellia rubifaciens* (Marbach 2000)

CHROMATOCHLAMYS Trevisan = **THELENELLA** Nyl.

- muscorum* (Fr.) H. Mayrhofer & Poelt var. *muscorum* = *Thelenella muscorum*
muscorum var. *octospora* (Nyl.) H. Mayrhofer & Poelt = *Thelenella muscorum* var. *octosporum*

CHRYSOPSORA M. Choisy

- testacea* (Hoffm.) M. Choisy = *Protoblastenia testacea*, but not in North American flora.

CHRYSOTHRIX Mont.

- caesia** (Flotow) Ertz & Tehler (Ertz & Tehler 2011) Syns.: *Allarthonia caesia*, *Arthonia caesia*, *A. lecideella*
candelaris (L.) J. R. Laundon Syns.: *Lepraria candelaris*, *L. flava*, *L. citrina* sens. lat.
chamaecyparicola Lendemer (Lendemer & Elix 2010)
chlorina (Ach.) J. R. Laundon Syn.: *Lepraria chlorina*
chrysophthalma (P. James) P. James & J. R. Laundon (Tønsberg 2002)
granulosa G. Thor (Tønsberg 2004a)

insulizans R. C. Harris & Ladd (Harris & Ladd 2008)
onokoensis (Wolle) R. C. Harris & Ladd (Harris & Ladd 2008)
susquehannensis Lendemer & Elix (Lendemer & Elix 2010)
xanthina (Vainio) Kalb (Harris & Ladd 2008)
 flavovirens Tønsberg (Harris & Lendemer 2005) North American report is *C. chamaecyparicola*

CIPOSIA Marbach

wheeleri (R. C. Harris) Marbach Syn.: *Buellia wheeleri* (Marbach 2000)

CIRCINARIA Link (Nordin et al. 2010)

arida Owe-Larsson, A. Nordin & Tibell (Owe-Larsson et al. 2011) Syns.: *Aspicilia desertorum*, *Lecanora desertorum* (American reports only)
caesiocinerea (Nyl. ex Malbr.) A. Nordin, Savić & Tibell Syns.: *Aspicilia caesiocinerea*, *Lecanora caesiocinerea*
calcarea (L.) A. Nordin, Savić & Tibell Syns.: *Aspicilia calcarea*, *Lecanora calcarea*
contorta (Hoffm.) A. Nordin, Savić & Tibell Syns.: *Aspicilia contorta*, *Lecanora contorta*
elmorei (E. D. Rudolph) Owe-Larsson, A. Nordin & M. Sohrabi (Owe-Larsson et al. 2011) Syn.: *Lecanora elmorei*
gibbosa (Ach.) A. Nordin, Savić & Tibell Syns.: *Aspicilia gibbosa*, *Lecanora gibbosa*, *L. gibbosula*
hispida (Mereschk.) A. Nordin, Savić & Tibell Syns.: *Agrestia hispida*, *A. cyphellata*, *Aspicilia hispida*
leproscens (Sandst.) A. Nordin, Savić & Tibell Syn.: *Aspicilia leproscens*
rogeri (Sohrabi) Sohrabi (Sohrabi et al. 2013b) Syn.: *Aspicilia rogeri*

CLADIDIUM Hafellner

bolanderi (Tuck.) B. D. Ryan Syns: *Lecanora thamnitis*, *L. bolanderi*
 thamnitis (Tuck.) Hafellner = *C. bolanderi*

CLADINA Nyl. = **CLADONIA** (Ahti & DePriest 2001)

aberrans (Abbeyes) Hale & W. L. Culb. = *Cladonia stellaris*
alpestris (L.) Nyl. = *Cladonia stellaris*
arbuscula (Wallr.) Hale & W. L. Culb. = *Cladonia arbuscula*
arbuscula subsp. **beringiana** (Ahti) N. S. Golubk. = *Cladonia arbuscula* subsp. **beringiana**
beringiana (Ahti) Trass = *Cladonia arbuscula* subsp. **beringiana**
ciliata (Stirton) Trass var. **ciliata** = *Cladonia ciliata* var. **ciliata**
ciliata var. **tenuis** (Flörke) Ahti & M. J. Lai = *Cladonia ciliata* var. **tenuis**
conspicua Ahti = *Cladonia conspicua*
evansii (Abbeyes) Hale & W. L. Culb. = *Cladonia evansii*
impexa B. de Lesd. = *Cladonia portentosa*
leucophaea (Abbeyes) Hale & W. L. Culb. = *Cladonia ciliata* var. **ciliata**
mitis (Sandst.) Mong. = *Cladonia arbuscula* subsp. **mitis**
pacifica (Ahti) Hale & W. L. Culb. = *Cladonia portentosa* subsp. **pacifica**
portentosa (Dufour) Follmann = *Cladonia portentosa*
portentosa subsp. **pacifica** (Ahti) Ahti = *Cladonia portentosa* subsp. **pacifica**
portentosa subsp. **pacifica** f. **decolorans** (Ahti) Ahti = *Cladonia portentosa* subsp. **pacifica** f. **decolorans**
pseudoëvansii (Asahina) Hale & W. L. Culb. = *Cladonia pseudoëvansii*
rangiferina (L.) Nyl. = *Cladonia rangiferina*
sandstedei (Abbeyes) Ahti = *Cladonia sandstedei*
stellaris (Opiz) Brodo = *Cladonia stellaris*
stellaris var. **aberrans** (Abbeyes) Ahti = *Cladonia stellaris*
stygia (Fr.) Ahti = *Cladonia stygia*
submitis (A. Evans) Hale & W. L. Culb. = *Cladonia submitis*
subtenuis (Abbeyes) Hale & W. L. Culb. = *Cladonia subtenuis*
subtenuis f. **cinerea** (Ahti) Ahti = *Cladonia subtenuis* f. **cinerea**
tenuis (Flörke) B. de Lesd. = *Cladonia ciliata* var. **tenuis**
terrae-novae (Ahti) Hale & W. L. Culb. = *Cladonia terrae-novae*

CLADONIA P. Browne

abbreviatula G. Merr.
acuminans R. C. Harris (Harris 2009)
acuminata (Ach.) Norrlin
alaskana A. Evans
albonigra Brodo & Ahti (Brodo & Ahti 1996)
alinii Trass (Ahti 1980)
amaurocraea (Flörke) Schaerer
andereggii S. Hammer
anitae W. L. Culb. & C. F. Culb.
apodocarpa Robbins
appalachensis Yoshim. & Sharp ex Lendemer & R. C. Harris (Lendemer & Harris 2013b)
arbuscula (Wallr.) Flotow subsp. **arbuscula** Syn.: *Cladina arbuscula*
arbuscula subsp. **beringiana** Ahti Syn.: *Cladina arbuscula* subsp. *beringiana*
arbuscula subsp. **mitis** (Sandst.) Ruoss Syn.: *Cladina mitis* (Piercey-Normore 2010)
artuata S. Hammer
asahinae J. W. Thomson
atlantica A. Evans
bacilliformis (Nyl.) Sarnth.
beaumontii (Tuck.) Vainio
bellidiflora (Ach.) Schaerer
borealis S. Stenroos
boryi Tuck.
botryocarpa G. Merr.
botrytes (K. G. Hagen) Willd.
brevis (Sandst.) Sandst.
buckii R. C. Harris
caespiticia (Pers.) Flörke
cariosa (Ach.) Sprengel
carneola (Fr.) Fr.
caroliniana Tuck. Syn.: *Pycnothelia cladinoidea*
cenotea (Ach.) Schaerer
cervicornis (Ach.) Flotow subsp. **cervicornis**
chlorophaea (Flörke ex Sommerf.) Sprengel
ciliata Stirton Syn.: *Cladina ciliata*
ciliata var. **tenuis** (Flörke) Ahti Syn.: *Cladina ciliata* var. *tenuis*
cinerella Ahti (Ahti 2000, Seavey 2010[2011])
coccifera (L.) Willd.
concinna Ahti & Goward (Ahti 2007)
coniocraea (Flörke) Sprengel
conista (Nyl.) Robbins (Pino-Bodas et al. 2012)
conspicua (Ahti) Ahti Syn.: *Cladina conspicua*
cornuta (L.) Hoffm. subsp. **cornuta**
cornuta subsp. **groenlandica** (E. Dahl) Ahti
crispata (Ach.) Flotow var. **crispata**
crispata var. **cetrariiformis** (Delise) Vainio
cristatella Tuck.
cryptochlorophaea Asahina
cyanipes (Sommerf.) Nyl.
cylindrica (A. Evans) A. Evans
dactylota Tuck.
dahlia Kristinsson
decorticata (Flörke) Sprengel
deformis (L.) Hoffm.
didyma (Fée) Vainio
didyma var. **vulcanica** (Zoll. & Moritzi) Vainio

digitata (L.) Hoffm.
dimorpha S. Hammer
dimorphoclada Robbins
ecmocyna Leighton subsp. **ecmocyna**
ecmocyna subsp. **intermedia** (Robbins) Ahti
ecmocyna subsp. **occidentalis** Ahti (Brodo & Ahti 1996)
evansii Abbayes Syn.: *Cladina evansii*
extracorticata S. Hammer
farinacea (Vainio) A. Evans
fimbriata (L.) Fr.
firma (Nyl.) Nyl.
floerkeana (Fr.) Flörke
floridana Vainio
furcata (Hudson) Schrader
glauca Flörke
gracilis (L.) Willd. subsp. **gracilis**
gracilis subsp. **elongata** (Jacq.) Vainio
gracilis subsp. **turbinata** (Ach.) Ahti
gracilis subsp. **vulnerata** Ahti
granulans Vainio
grayi G. Merr. ex Sandst.
homosekikaica Nuno
humilis (With.) J. R. Laundon
hypoxantha Tuck.
imbricarica Kristinsson
incrassata Flörke
jakutica Ahti (McCune et al. 2009)
jaliscana Ahti & Guzm.-Dáv. (Ahti & Hammer 2002)
kanewskii Oxner
labradorica Ahti & Brodo
lacryma S. Hammer (Hammer 2001)
leporina Fr.
libifera Savicz (McCune et al. 2009; Hansen & Ahti 2011)
luteoalba Wheldon & A. Wilson
macilenta Hoffm.
macilenta var. **bacillaris** (Ach.) Schaerer
macroceras (Delise) Ahti
macrophylla (Schaerer) Stenh.
macrophyllodes Nyl.
magyarica Vainio
maritima K. Knudsen & Lendemer (Knudsen & Lendemer 2009a)
mateocyatha Robbins
maxima (Asahina) Ahti
merochlorophaea Asahina
monomorpha Aptroot, Sipman & van Herk (Kowalewska et al. 2008)
multiformis G. Merr.
nana Vainio
nashii Ahti (Ahti & Hammer 2002)
nipponica Asahina
nitens Ahti (Ahti 2007)
norvegica Tønsberg & Holien
novochlorophaea (Sipman) Brodo & Ahti (Brodo & Ahti 1996)
ochrochlora Flörke
oricola Ahti & S. Stenroos (Ahti & Stenroos 2008)
pachycladodes Vainio
parasitica (Hoffm.) Hoffm.

perforata A. Evans
perlomera Kristinsson
petrophila R. C. Harris
peziziformis (With.) J. R. Laundon
phyllophora Hoffm.
piedmontensis G. Merr.
pleurota (Flörke) Schaerer
pocillum (Ach.) O. J. Rich.
poroscypha S. Hammer
portentosa (Dufour) Coem. Syn.: *Cladina portentosa*
portentosa subsp. **pacifica** (Ahti) Ahti Syn.: *Cladina portentosa* subsp. *pacifica*
portentosa subsp. **pacifica** f. **decolorans** Ahti Syn.: *Cladina portentosa* subsp. *pacifica* f. *decolorans*
prolifera Ahti & S. Hammer
prostrata A. Evans
pseudalcicornis Asahina (Ahti 2007)
pseudoëvansii Asahina Syn.: *Cladina pseudoëvansii*
pulvinella S. Hammer
pyxidata (L.) Hoffm.
ramulosa (With.) J. R. Laundon
rangiferina (L.) F. H. Wigg. Syn.: *Cladina rangiferina*
rappii A. Evans
ravenelii Tuck.
rei Schaerer (Syrek & Kukwa 2008, Dolnik et al. 2010, Pino-Bodas et al. 2010)
robbinsii A. Evans
sandstedei Abbayes Syn.: *Cladina sandstedei*
santensis Tuck.
scabriuscula (Delise) Nyl.
scotteri Ahti & E. S. Hansen (Hansen & Ahti 2011)
simulata Robbins
singularis S. Hammer
squamosa (Scop.) Hoffm.
squamosa var. **subsquamosa** (Nyl. ex Leighton) Vainio
stellaris (Opiz) Pouzar & Vězda Syn.: *Cladina stellaris*
stipitata Lendemer & Hodkinson (Lendemer & Hodkinson 2009)
straminea (Sommerf.) Flörke (Timdal & Tønsberg 2012)
strepsilis (Ach.) Grognot
stricta (Nyl.) Nyl.
stygia (Fr.) Ruoss Syn.: *Cladina stygia*
subcariosa Nyl. (Ahti 2000)
subfimbriata Ahti (Ahti & Hammer 2002)
subfurcata (Nyl.) Arnold
submitis A. Evans Syn.: *Cladina submitis*
subradiata (Vainio) Sandst.
subsetacea Robbins ex A. Evans
subsquamosa Kremp.
subtenuis (Abbayes) Mattick Syn.: *Cladina subtenuis*
subtenuis f. **cinerea** Ahti Syn.: *Cladina subtenuis* f. *cinerea*
subulata (L.) F. H. Wigg.
sulphurina (Michaux) Fr.
symphy carpia (Flörke) Fr. (Ahti 2000, Hansen & Ahti 2011)
terrae-novae Ahti Syn.: *Cladina terrae-novae*
thiersii S. Hammer
thomsonii Ahti
transcendens (Vainio) Vainio
trassii Ahti (Ahti 1998)
turgida Ehrh. ex Hoffm.

uliginosa (Ahti) Ahti (Ahti 1998)
umbricola Tønsberg & Ahti
uncialis (L.) F. H. Wigg. subsp. **uncialis** (Stenroos et al. 2015)
uncialis subsp. **biuncialis** (Hoffm.) M. Choisy (Stenroos et al. 2015)
verruculosa (Vainio) Ahti
verticillata (Hoffm.) Schaerer (Ahti, in litt.)
wainioi Savicz
aberrans (Abbayes) Stuckenb. = *Cladonia stellaris*
acuminata var. norrlinii (Vainio) Lynge = *C. acuminata*
alpestris (L.) Rabenh. = *C. stellaris*
alpestris f. aberrans Abbayes = *C. stellaris*
alpicola (Flotow) Vainio = *C. macrophylla*
anomaea (Ach.) Ahti & P. James = *C. ramulosa*
bacillaris (Ach.) Genth = *C. macilenta* var. *bacillaris*
balfourii auct. = *C. subradiata*
balfourii Crombie = *C. macilenta*
blakei Robbins = *C. coccifera*
borbonica (Delise) Nyl. North American reports are *C. cylindrica* (Evans 1950)
botryoides (Tuck.) Vainio = *C. squamosa* (Ahti et al. 2016)
calycantha Delise ex Nyl. = *C. rappii* for North American records.
capitata (Michaux) Sprengel = *C. peziziformis*
carassensis Vainio = misidentification for North America
cerasphora Vainio (Fink 1935) = *C. stricta* (Ahti 1998)
cerasphora auct. = *C. trassii* (Ahti, in litt.)
cervicornis subsp. verticillata (Hoffm.) Ahti = *Cladonia verticillata* (Ahti, in litt.)
cetrarioides Schwein. ex Tuck. (Fink 1935) = *C. leporina* (Lendemer & Hewitt 2002)
cladinoides (Nyl.) Zahlbr. = *Cladonia caroliniana*
clavulifera Vainio = *C. subcariosa* (Ahti 2000)
conistea auct. = *C. humilis*
conoidea Ahti = *C. humilis*
cornucopioides auct. (Mohr 1901) = *C. coccifera*
cornutoradiata (Leighton) Sandst. = *C. subulata*
corymbosula Nyl. (Fink 1935) Apparent misidentification for North America (Esslinger & Tucker 2009)
crinita Bertol. = *C. evansii* (Ahti et al. 2016)
cyathomorpha «(Evans) Evans» (Qian & Klinka 1998) = misidentification for North America
degenerans (Flörke) Sprengel = *C. phyllophora*
delessertii Vainio = *C. subfurcata*
delicata auct. = *C. parasitica*
diversa Asperges (Lendemer 2006) = misidentification for North America (Ahti, in litt.)
elongata auct. non (Jacq.) Hoffm. = misidentification for North America, possibly *C. macroceras* or *C. maxima*,
elongata (Jacq.) Hoffm. = *C. gracilis* var. *elongata*
endoxantha Vainio (Fink 1935) = *C. hypoxantha* (Thomson 1967)
exasperatula G. Merr. (Fink 1935) = *C. beaumontii* (Tuck.) Vainio (Thomson 1967)
flabelliformis Vainio = *C. polydactyla*
flavescens Vainio = misidentification for North America
foliacea (Hudson) Willd. = misidentification for North America
furcata subsp. subrangiformis auct. N. Am. = *C. furcata* (Ahti, in litt.)
gonecha (Ach.) Asahina = *C. sulphurina*
gracilescens auct. = *C. stricta*
graciliformis Zahlbr. North American reports are errors, mostly representing *C. bellidiflora* (Dillman et al. 2012)
gracilis subsp. nigripes (Nyl.) Ahti = *C. gracilis* subsp. *elongata*
hammeri Ahti (Ahti & Hammer 2002) = *C. pulvinella* (Pino-Bodas et al. 2013)
herrei Fink ex J. Hedrick = *C. furcata*

heteromorpha G. Merr. (Fink 1935) = *Pycnothelia papillaria* (Laundon 1986)
hookeri Tuck. = *C. bellidiflora*
hookeri sensu J. W. Thomson = *C. graciliformis*
humilis var. bourgeanica A.W. Archer = *C. conista*
innominata Lendemer (Lendemer 2008) = *C. conista* (Pino-Bodas et al. 2012)
invisa Robbins = *C. ochrochlora*
japonica Vainio = *C. crispata*
lepidota auct. = *C. trassii* (Ahti, in litt.)
leptothallina G. Merr. = *C. peziziformis*
linearis A. Evans = *Cetradonia linearis*
macroptera Räsänen = *C. scabriuscula* (fide T. Ahti)
major (K. G. Hagen) Sandst. = *C. fimbriata*
merochlorophaea var. novochlorophaea Sipman = *C. novochlorophaea*
metacorallifera Asahina = *C. straminea* (Timdal & Tønsberg 2012)
microphylliza G. Merr. (Fink 1935) = *C. beaumontii* (Thomson 1967)
mitis Sandst. = *Cladonia arbuscula* subsp. *mitis*
mitrula Tuck. = *C. peziziformis*
nanodes Robbins ex Sandst. = nom. invalid., identity uncertain
nemoxyna (Ach.) Arnold = *C. rei*
norrlinii Vainio = *C. acuminata* var. *acuminata*
palamaea (Ach.) Fink (Fink 1935) = *C. furcata* (Thomson 1967)
paludicola (Tuck.) G. Merr. (Fink 1935) = *incrassata* (Thomson 1967)
papillaria (Ehrh.) Hoffm. = *Pycnothelia papillaria*
pityrea (Flörke) Fr. = *C. ramulosa*
polycarpia G. Merr. = *C. subcariosa* (Ahti 2000)
polycarpoides Nyl. = *C. subcariosa* (Ahti 2000)
polydactyla (Flörke) Sprengel = misidentification for North America, mostly refers to *C. umbricola* (fide T. Ahti)
pseudodigitata Gyelnik = *C. coccifera*
pseudohondoensis Asahina = misidentification for North America
pseudomacilenta Asahina = misidentification for North America
pseudorangiformis Asahina = *C. wainioi*
pseudostellata Asahina (Spribille et al. 2010) = *C. uncialis* subsp. *uncialis* (Stenroos et al. 2015)
psoromica J. P. Dey = *C. dimorphoclada* Robbins (Ahti 2000)
pulchella Schwein. (Mohr 1901) = *C. didyma*
pycnoclada (Gaudich.) Nyl. = misidentification for North America (Ahti 1961)
rangiformis Hoffm. = not in North America
rappii var. exilior (Abbayes) Ahti = *C. rappii* var. *rappii*
reticulata (Russell) Vainio (Fink 1935) = *C. boryi* (Thomson 1967)
schofieldii Ahti & Brodo (Brodo & Ahti 1996) = *C. pseudalcicornis*
sobolesens Nyl. ex Vainio = *C. subcariosa* (Ahti 2000)
stellaris var. aberrans (Abbayes) ined. = *C. stellaris* (Ahti, in litt.)
stenophyllodes Vainio (Fink 1935) = misidentification for North America
stricta var. uliginosa Ahti = *C. uliginosa*
subapodocarpa Harris, nomen nudum (Hale 1979) = *Cladonia petrophila*
subcervicornis (Vainio) Kernst. = misidentification for North America
subclavulifera Asahina = *C. subcariosa* (Ahti 2000)
subrangiformis auct. N. Am. = *C. furcata*
subsquamosa (Nyl. ex Leighton) Crombie nom. illeg. = *C. squamosa* var. *subsquamosa*
subsubulata Nyl. = misidentification for North America
sylvatica nom. utique rej. s. auct. = *C. arbuscula* subsp. *arbuscula* (Ahti, in litt.)
theiophila Asahina = *C. vulcani*, but not present in North America
vulcani Savicz = misidentification for North America
vulcanica Zoll. & Moritzi = *C. didyma* var. *vulcanica*
yunnana (Vainio) Abbayes ex J. C. Wei & Y. M. Jiang = misidentification for North America

CLADOPHIALOPHORA Borelli (Diederich et al. 2013)

***megalosporae** Diederich (Diederich et al. 2013)

***parmeliae** Etayo & Diederich (Kocourková & Knudsen 2009d) Syn.: *Sclerococcum parmeliae*

CLATHROPORINA Müll. Arg.

isidiifera R. C. Harris (Harris 1995a)

subpungens (Malme) R. C. Harris (Harris 1995a)

tetracerae (Ach.) R. C. Harris (Harris 1995a)

⁺**amygdalina** sensu Fink = *Julella sublactea* (Harris 1995a).

confinis Müll. Arg. = *Porina nuculastrum* (Harris 1995a)

diphloea Zahlbr. = *Laurera megasperma*

⁺**exiguella** Zahlbr. = *Julella sublactea* (Harris 1995a)

nuculastrum Müll. Arg. = *Porina nuculastrum* (Harris 1995a)

CLAUROUXIA D. Hawksw.

chalybeioides (Nyl.) D. Hawksw. (Fyday 2010)

CLAUZADEA Hafellner & Bellem.

chondrodes (A. Massal.) Clauzade & Cl. Roux (Lendemer et al. 2013)

immersa (Hoffm.) Hafellner & Bellem. Syn.: *Lecidea calcivora*

metzleri (Körber) Clauzade & Cl. Roux ex D. Hawksw. (Hansen 2003)

monticola (Ach.) Hafellner & Bellem. Syns.: *Lecidea monticola*, *L. fusciorubens*, *Protoblastenia monticola*

CLAUZADEANA Cl. Roux

macula (Taylor) Coppins & Rambold (Hertel 1991) Syn.: *Lecanora morioides*

CLAVASCIDIUM Breuss (Breuss 1996)

lacinulatum (Ach.) M. Prieto var. **lacinulatum** (Prieto et al. 2012) Syns.: *Catapyrenium lacinulatum*, *Placidium lacinulatum*

lacinulatum var. **atrans** (Breuss) M. Prieto (Prieto et al. 2012)

lacinulatum var. **erythrostrum** (Breuss) M. Prieto (Prieto et al. 2012)

umbrinum (Breuss) Breuss Syn.: *Placidium umbrinum* (Prieto et al. 2012)

CLIOSTOMUM Fr.

corrugatum (Ach.: Fr.) Fr. Syn.: *Catillaria graniformis*

flavidulum Hafellner & Kalb (Tønsberg 1997)

griffithii (Sm.) Coppins Syns.: *Catillaria griffithii*, *C. tricolor* auct.

leprosum (Räsänen) Holien & Tønsberg

tenerum (Nyl.) Coppins & S. Ekman (Ekman 1997) Syns.: *Lecania tenera*, *Lecanora tenera*

vitellinum Gowan

graniforme (K. G. Hagen) Coppins = *C. corrugatum*

luteolum Gowan = *C. leprosum*

pallens (Kullhem) S. Ekman = *Biatora pallens*

CLYPEOCOCCUM D. Hawksw.

***bisporum** Zhurb. (Zhurbenko 2009b)

***grossum** (Körber) D. Hawksw.

***hypocenomycis** D. Hawksw.

***epicrassum** (H. Olivier) Hafellner & Nav.-Ros. According to Hawksworth (1986), our records probably based on *Polycoccum squamarioides*

COCCOCARPIA Pers.

domingensis Vainio

erythroxyli (Sprengel) Swinscow & Krog

filiformis Arv. (Kaminsky et al. 2013)

palmicola (Sprengel) Arv. & D. J. Galloway
pellita (Ach.) Müll. Arg. (Kaminsky et al. 2013) Syn.: *Pannaria molybdaea*
prostrata Lücking, Aptroot & Sipman (Lücking et al. 2007)
stellata Tuck. Syns.: *Pannaria stellata*, *Parmeliella stellata*
asterella (Nyl.) Vainio = *C. stellata*
cronia (Tuck.) Vainio = *C. palmicola*
incisa Pers. = *C. erythroxyli*
molybdaea Pers. = *C. pellita*
parmelioides (Hooker) Tuck. ex M. A. Curtis = *C. erythroxyli*

COCCOTREMA Müll. Arg.

hahriae T. Sprib. & Tønsberg (Spribille et al. 2010)
maritimum Brodo
minutum (Degel.) R. Sant. (Spribille et al. 2010)
pocillarium (Cummings) Brodo Syns.: *Ochrolechia pacifica*, *Perforaria minuta*

COELOCAULON Link

aculeatum (Schreber) Link = *Cetraria aculeata*
divergens (Ach.) R. Howe = *Bryocaulon divergens*
muricatum (Ach.) J. R. Laundon = *Cetraria muricata*
odontellum (Ach.) R. Howe = *Cetraria odontella*

COENOGONIUM Ehrenb.

congensis C. W. Dodge (Lücking et al. 2011b)
disjunctum Nyl.
geralense (P. Henn) Lücking (Lücking et al. 2011b)
implexum Nyl.
interplexum Nyl.
interpositum Nyl.
isidiatum (G. Thor & Vězda) Lücking, Aptroot & Sipman (Seavey & Seavey 2014a)
isidiiferum (Lücking) Lücking (Seavey & Seavey 2014a)
isidiigerum (Vězda & Osorio) Lücking, Aptroot & Sipman (Seavey & Seavey 2012)
isidiosum (Breuss) Rivas Plata, Lücking, Umaña & Chavez (Seavey & Seavey 2012)
linkii Ehrenb.
luteocitrinum Rivas Plata, Lücking & Umaña (Lücking et al. 2011b)
lutescens (Vězda & Malcolm) Malcolm (Seavey et al. 2014)
luteum (Dicks.) Kalb & Lücking Syn.: *Dimerella lutea* (Lücking & Kalb 2000), *Gyalecta lutea*, *Microphiale lutea*
missouriense J. Davis
moniliforme Tuck.
nepalense (G. Thor & Vězda) Lücking (Seavey & Seavey 2014a)
pineti (Ach.) Lücking & Lumbsch (Lücking, Stuart & Lumbsch 2004) Syns. *Dimerella pineti*, *D. diluta*, *Microphiale diluta*
pusillum (Mont.) Lücking, Aptroot & Sipman (Seavey et al. 2014)
roumeguerianum (Müll. Arg.) Kalb (Seavey et al. 2014)
stenosporum (Malme) Lücking, Aptroot & Sipman (Seavey et al. 2014)
subdentatum (Vězda & G. Thor) Rivas Plata, Lücking, Umaña & Chavez (Lücking et al. 2011b)
subdilutum (Malme) Lücking, Aptroot & Sipman (Seavey & Seavey 2014a)
subfallaciosum (Vězda & Farkas) Lücking, Aptroot & Sipman (Lücking et al. 2011b)

COLLEMA F. H. Wigg.

coniophilum Goward (Spribille et al. 2009)
curtisporum Degel.
flaccidum (Ach.) Ach. Syn.: *Synechoblastus rupestris*
furfuraceum (Arnold) Du Rietz
furfuraceum var. **luzonense** (Räsänen) Degel.

glebulentum (Nyl. ex Crombie) Degel.
leptaleum Tuck. Syn.: *Synechoblastus leptaleus*, *S. microptychius*
nigrescens (Hudson) DC. Syn.: *Synechoblastus nigrescens*
pulchellum Ach. Syn.: *Leptogium pulchellum*
pulchellum var. **leucopeplum** (Tuck.) Degel.
pulchellum var. **subnigrescens** (Müll. Arg.) Degel.
pustulatum Ach.
ryssoleum (Tuck.) A. Schneider Syn.: *Synechoblastus ryssoleus*
subflaccidum Degel.
subnigrescens Degel.
subparvum Degel.
texanum Tuck. Syn.: *Synechoblastus texanus*, *S. laciniatus*
thamnoides Riddle
apalachense Tuck. = *Scytinium apalachense* (Otálora et al. 2014)
arcticum Lynge = *Rostania ceranisca*
aggregatum (Ach.) Röhl = *Gabura fasciculare*
auriculatum Hoffm. = *Lathagrium auriforme*
auriforme (With.) Coppins & J. R. Laundon = *Lathagrium auriforme* (Otálora et al. 2014)
bachmanianum (Fink) Degel. = *Enchylium bachmanianum* (Otálora et al. 2014)
bermudanum Tuck. ex Riddle = *C. pustulatum* (Degelius 1974)
bermudiana Tuck. ex Riddle (Fink 1935) Orthographic variant of *C. bermudanum*
callibotrys Tuck. = *Rostania callibotrys* (Otálora et al. 2014)
callopismum A. Massal. = *Scytinium callopismum* (Otálora et al. 2014)
callopismum var. *rhyparodes* (Nyl.) Degel. = *Scytinium callopismum*
ceraniscum Nyl. = *Rostania ceranisca* (Otálora et al. 2014)
cheileum (Ach.) Ach. = *Blennothallia crispa*
coccophorum Tuck. = *Enchylium coccophorum* (Otálora et al. 2014)
conglomeratum Hoffm. = *Enchylium conglomeratum* (Otálora et al. 2014)
conglomeratum var. *corynesporum* (Malme) Degel. = *Enchylium conglomeratum*
conglomeratum var. *crassiusculum* (Malme) Degel. = *Enchylium conglomeratum*
crispum (Hudson) Weber ex F. H. Wigg. = *Blennothallia crispa* (Otálora et al. 2014)
cristatellum Tuck. = *Enchylium tenax*
cristatum (L.) Weber ex F. H. Wigg. = *Lathagrium cristatum* (Otálora et al. 2014)
cristatum var. *marginale* (Hudson) Degel. = *Lathagrium cristatum*
cyrtaspis Tuck. = *Enchylium conglomeratum*
dichotomum (With.) Coppins & J. R. Laundon = *Lathagrium dichotomum* (Otálora et al. 2014)
dubium B. de Lesd. = *Enchylium coccophorum* (Otálora et al. 2014)
fasciculare (L.) F. H. Wigg. = *Gabura fasciculare* (Jørgensen 2014)
fayettense Fink = *C. pustulatum*
fecundum Degel. = *Blennothallia fecunda* (Otálora et al. 2014)
fluviatile (Hudson) Steudel = *Lathagrium dichotomum*
fragrans (Sm.) Ach. = *Scytinium fragrans* (Otálora et al. 2014)
furvum (Ach.) Ach. = *Lathagrium fuscovirens* (Otálora et al. 2014)
fuscovirens (With.) J. R. Laundon = *Lathagrium fuscovirens* (Otálora et al. 2014)
glaucescens Hoffm. = *Enchylium limosum*
granosum auct. = *C. auriforme*
kauaiense H. Magn. = *Scytinium kauaiense* (Otálora et al. 2014)
laciniatum Nyl. = *C. texanum*
leucocarpum Hooker & Taylor = misidentification for North America
leucopeplum (Tuck.) A. Schneider = *C. pulchellum* var. *leucopeplum*
limosum (Ach.) Ach. = *Enchylium limosum* (Otálora et al. 2014)
microphyllum Ach. = *Scytinium fragrans*
microptychium Tuck. = *C. leptaleum*
multipartitum Sm. = *Callome multipartita* (Otálora et al. 2014)
myriococcum (Ach.) Ach. = *Lempholemma polyanthes*
novomexicanum B. de Lesd. = *Enchylium coccophorum*

nylanderianum Zahlbr. = *C. texanum*
 occultatum Bagl. = *Rostania occultata* (Otálora et al. 2014)
 ohioense (Fink) Zahlbr. = *Enchylium conglomeratum*
 plicatile (Ach.) Ach. = *Scytinium plicatile* (Otálora et al. 2014)
 polycarpon Hoffm. = *Enchylium polycarpon* (Otálora et al. 2014)
 pulposum (Bernh.) Ach. = *Enchylium tenax*
 pycnocarpum Nyl. = *Enchylium conglomeratum*
 quadrifidum D. F. Stone & McCune (Stone & McCune 2010) = *Rostania quadrifida* (McCune et al. 2014b)
 rugosum Kremp. Not known from North America.
 stenophyllum Nyl. = *Lathagrium dichotomum*
 subfurfuraceum Degel. = *C. furfuraceum* var. *luzonense*
 subfurvum sensu Degelius = *C. subflaccidum* Degel.
 subfurvum (Müll. Arg.) Degel. = *C. rugosum*, but this taxon is not known from North America.
 tenax (Sw.) Ach. = *Enchylium tenax* (Otálora et al. 2014)
 tenax var. *ceranoides* (Borrer) Degel. = *Enchylium tenax*
 tenax var. *corallinum* (A. Massal.) Degel. = *Enchylium tenax*
 tenax var. *crustaceum* (Kremp.) Degel. = *Enchylium tenax*
 tenax var. *expansum* Degel. = *Enchylium expansum* (Jørgensen & Goward 2014b)
 tenax var. *substellatum* (H. Magn.) Degel. = *Enchylium tenax*
 tuniforme (Ach.) Ach. = *Lathagrium fuscovirens*
 undulatum Laurer ex Flotow = *Lathagrium undulatum* (Otálora et al. 2014)
 undulatum var. *granulosum* Degel. = *Lathagrium undulatum*
 verruciforme auct. = excluded as doubtful

COLLEMODES Fink = COLLEMA

bachmanianum Fink = *Enchylium bachmanianum*

COLLEMOPSISIDIUM Nyl.

angermannicum (Degel.) A. Nordin Syn.: *Pyrenocollema strontianense* (Nordin 2002)
bryospilum (Nyl.) Coppins Syn.: *Arthopyrenia bryospilum* (Fryday 2004a)
elegans (R. Sant.) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Pyrenocollema elegans*
foveolatum (A. L. Sm.) F. Mohr (Dillman et al. 2012)
halodytes (Nyl.) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Arthopyrenia halodytes*,
Pyrenocollema halodytes
sublitorale (Leighton) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Arthopyrenia sublitoralis*, *A. litoralis* auct., *Pyrenocollema sublitorale*

COLLEMOPSIS Nyl. ex Crombie

segregata Nyl. ex Hasse = *Lempholemma chalazanum*

COMBEA De Not.

californica (Th. Fr.) Follmann & M. Geyer = *Schizopelte californica*

CONIAMBIGUA Etayo & Diederich

***phaeographidis** Etayo & Diederich (Diederich 2003)

CONIARTHONIA Grube

gregarina (Willey) Grube (Grube 2001) Syn.: *Arthonia gregarina*, *Arthothelium gregarinum*
pyrrhula (Nyl.) Grube (Grube 2001) Syn.: *Arthonia pyrrhula*

CONIOCYBE Ach.

furfuracea (L.) Ach. = *Chaenotheca furfuracea*
 gracilescens Willey = *Chaenotheca chrysocephala* (Selva 2004)
 gracillima Vainio = *Chaenotheca gracillima*
 nivea (Hoffm.) Arnold non Tuck. & Mont. = *Sclerophora nivea*

pallida (Pers.) Fr. = Sclerophora nivea
sulphurea (Retz.) Nyl. = Chaenotheca brachypoda

CONIOCYBOPSIS Vainio

arenaria (Hampe ex A. Massal.) Vainio = Microcalicium arenarium

CONOTREMA Tuck.

albonigrum Zahlbr. = Trinathotrema stictideum
urceolatum (Ach.) Tuck. = Stictis urceolatum

CORA Fr. (Lawrey et al. 2009)

glabrata (Sprengel) Fr. Syn.: Dictyonema glabratum
pavonia (Sw.) Fr. = Cora glabrata, for North American reports

CORISCIMUM Vainio = LICHENOMPHALIA

viride (Ach.) Vainio = Lichenomphalia hudsoniana

CORNICULARIA (Schreber) Hoffm.

normoerica (Gunn.) Du Rietz
aculeata (Schreber) Ach. = Cetraria aculeata
californica (Tuck.) Du Rietz = Kaernefeltia californica
divergens Ach. = Bryocaulon divergens
fibrillosa (Ach.) Halsey = Bryoria furcellata
muricata (Ach.) Ach. = Cetraria muricata
odontella (Ach.) Westend. = Cetraria odontella
pseudosatoana Asahina = Bryocaulon pseudosatoanum

CORNUTISPORA Piroz.

***ciliata** Kalb (Cole & Hawksw. 2001)
***intermedia** Punith & D. Hawksw. (Esslinger & Egan 1995)
***lichenicola** D. Hawksw. & B. Sutton (Kalb et al. 1995)

CORTICIFRAGA D. Hawksw. & R. Sant.

***chugachiana** Zhurb. (Zhurbenko 2007a)
***fuckelii** (Rehm) D. Hawksw. & R. Sant. Syn.: Phragmonaevia fuckelii
***peltigerae** (Nyl.) D. Hawksw. & R. Sant. (Alstrup & Cole 1998)
***santessonii** Zhurb. & Zavarzin (Zhurbenko 2007a)
***scrobiculatae** Pérez-Ortega (Spribille et al. 2010)

CRATIRIA Marbach (Marbach 2000)

americana (Fée) Kalb & Marbach Syn.: Buellia modesta
lauricassiae (Fée) Marbach Syn.: Buellia lauricassiae
melanochlora (Kremp.) Marbach Syn.: Buellia melanochlora

CRESTROA (D. Hawksw.) Lendemer & Hodkinson (Lendemer & Hodkinson 2012)

crozalsiana (B. de Lesd. ex Harm.) Lendemer & Hodkinson (Lendemer & Hodkinson 2012) Syn.:
Canoparmelia crozalsiana, Parmelia crozalsiana, Pseudoparmelia crozalsiana

CRESPONEA Egea & Torrente

chloroconia (Tuck.) Egea & Torrente Syn.: Lecanactis chloroconia
flava (Vainio) Egea & Torrente (Harris 1995a)
leprieurii (Mont.) Egea & Torrente
premnea (Ach.) Egea & Torrente Syn.: Lecanactis premnea
premnea var. **saxicola** (Leighton) Egea & Torrente
proximata (Nyl.) Egea & Torrente

CROCEDIA Link (Galloway & Elix 2013)

aurata (Ach.) Link Syns.: *Pseudocyphellaria aurata*, *Sticta aurata*

CROCYNIA (Ach.) A. Massal.

gossypina (Sw.) A. Massal.

pyxinoides Nyl.

aliciae Hue = *Lepraria finkii* (fide J. Lendemer)

alpina B. de Lesd. = *Leparia neglecta*

americana B. de Lesd. = *Lepraria finkii* (fide J. Lendemer)

finkii B. de Lesd. = *Lepraria finkii*

membranacea (Dickson) Zahlbr. = *Lepraria membranacea*

moxleyi Plitt = non-lichenized *Septobasidium* sp.

neglecta (Nyl.) Hue = *Lepraria neglecta*

CRYPTODISCUS Corda

gloeocapsa (Nitschke ex Arnold) Baloch, Gilenstam & Wedin Syn.: *Bryophagus gloeocapsa* (Baloch et al. 2009)

CRYPTOLECHIA A. Massal.

carneolutea (Turner) A. Massal. Syns.: *Gyalectina carneolutea*, *Gyalecta carneolutea*

nana (Tuck.) D. Hawksw. & Dibben (Lücking et al. 2011b)

CRYPTOTHECIA Stirton

effusa (Müll. Arg.) R. Sant. (Lücking et al. 2011b)

evergladensis Seavey (Seavey 2009)

fuscopunctata F. Seavey & J. Seavey (Seavey & Seavey 2014a)

miniata Vainio ex Lücking (Lücking et al. 2011b)

punctosorediata Sparrius (Lücking et al. 2011b)

striata G. Thor Syn.: *Chiodecton montagnei* sensu auct. N.A. (Thor 1991)

rubrocincta (Ehrenb. : Fr.) G. Thor = *Herpothallon rubrocinctum*

CRYPTOTHELE Th. Fr.

granuliforme (Nyl.) Henssen Syn.: *Pyrenopsidium granuliforme*, *Pyrenopsis granuliformis*

permiscens (Nyl.) Th. Fr. Syn.: *Pyrenopsis phylliscina*

CULBERSONIA Essl. (Esslinger 2000a)

nubila (Moberg) Essl. (Esslinger 2002b)

americana Essl. = *C. nubila*

CYANISTICTA Gyelnik

epiflavoides Gyelnik (Gyelnik 1931) = *Pseudocyphellaria crocata*

CYBEBE Tibell = **CHAENOTHECA** (Tibell 2001)

gracilentata (Ach.) Tibell = *Chaenotheca gracilentata* (Tibell 2001)

CYPHELIOPSIS Vainio = **THELOMMA**

bolanderi (Tuck.) Vainio = *Thelomma mammosum*

CYPHELIUM Ach.

brachysporum Nád. v.

brunneum W. A. Weber

chloroconium (Tuck.) Zahlbr.

inquinans (Sm.) Trevisan Syn.: *Acolium tympanellum*

karelicum (Vainio) Räsänen

lucidum (Th. Fr.) Th. Fr.

notarisii (Tul.) Blomb. & Forssell

pinicola Tibell

***sessile** (Pers.) Trevisan

tigillare (Ach.) Ach.

trachylioides (Nyl. ex Branth & Rostrup) Erichsen

andersonii Herre = *Thelomma californicum*

caliciforme (Flotow) Zahlbr. = *Thelomma occidentale* for most North American records

californicum (Tuck.) Zahlbr. = *Thelomma californicum*

carolinianum (Tuck.) Zahlbr. = *Thelomma carolinianum*

farlowii (Tuck. ex Herre) Herre = *Thelomma californicum*

occidentale Herre = *Thelomma occidentale*

ocellatum (Körber) Trevisan = *Thelomma ocellatum*

sancti-jacobi (Tuck.) Zahlbr. = *Texosporium sancti-jacobi*

tigillare subsp. **notarisii** (Tul.) W. A. Weber = *C. notarisii*

ventricosulum (Müll. Arg.) Zahlbr. = *C. inquinans*

CYPHOBASIDIUM Millanes, Diederich & Wedin

***hypogymniicola** (Diederich & Ahti) Millanes, Diederich & Wedin Syn.: *Cystobasidium*

hypogymniicola (Millanes et al. 2016)

***usneicola** (Diederich & Alstrup) Millanes, Diederich & Wedin Syn.: *Cystobasidium usneicola* (Millanes et al. 2016)

CYSTOBASIDIUM (Lagerh.) Neuhoﬀ

***hypogymniicola** Diederich & Ahti (Diederich 1996) = *Cyphobasidium hypogymniicola* (Millanes et al. 2016)

***usneicola** Diederich & Alstrup (Diederich 1996) = *Cyphobasidium hypogymniicola* (Millanes et al. 2016)

CYSTOCOLEUS Thwaites

ebeneus (Dillwyn) Thwaites

DACAMPIA A. Massal.

***engeliana** (Sauter) A. Massal. (Henssen 1995)

hookeri (Borrer) A. Massal.

***lecaniae** Kocourk. & K. Knudsen (Kocourkova & Knudsen 2010)

***rufescentis** (Vouaux) D. Hawksw. (Zhurbenko & Daniëls 2003)

DACTYLINA Nyl.

arctica (Hooker f.) Nyl.

beringica C. D. Bird & J. W. Thomson (Treated as subsp. of *D. arctica* by Kärnefelt & Thell 1996)

ramulosa (Hooker f.) Tuck.

madreporiformis (Ach.) Tuck = *Allocetraria madreporiformis*

DACTYLOSPORA Körber

***aeruginosa** Holien & Ihlen (Ihlen et al. 2004a)

***amygdalariae** Triebel

***athallina** (Müll. Arg.) Hafellner Syn.: *Karschia athallina*

***attendenda** (Nyl.) Arnold

***borealis** Holien & Ihlen (Ihlen et al. 2004a)

***deminuta** (Th. Fr.) Triebel

***frigida** Hafellner (Dillman et al. 2012)

***glaucomarioides** (Willey ex Tuck.) Hafellner Syn.: *Buellia glaucomarioides*, *Leciographa* “*glaucomarioidea*”

***inquilina** (Tuck.) Hafellner Syn.: *Buellia inquilina*, *Buelliella inquilina*

***lobariella** (Nyl.) Hafellner Syn.: *Buelliella nuttallii*

***lurida** Hafellner (Harris & Lendemer 2005)

***parasitica** (Flörke ex Sprengel) Zopf Syn.: *Leciographa inspersa*, *Sclerophyton occidentale*

- ***parellaria** (Nyl.) Arnold
- ***pertusariicola** (Willey ex Tuck.) Hafellner Syn.: *Buellia pertusariicola*, *Leciographa pertusariicola*
- ***pleiosperma** Triebel (Hafellner et al. 2002)
- ***porphyrea** Hafellner & Kalb (Etayo & Breuss 1998)
- ***purpurascens** Triebel
- ***rhyparizae** Arnold (Zhurbenko 2013)
- ***saxatilis** (Schaerer) Hafellner var. **saxatilis** Syn.: *Buelliella saxatilis*
- ***urceolata** (Th. Fr.) Arnold Syn.: *Leciographa urceolata*

DEGELIA Arv. & D. J. Galloway

plumbea (Lightf.) P. M. Jørg. & P. James = *Pectenidia plumbea* (Ekman et al. 2014)

DENDRISCOCAULON Nyl.

intricatum (Nyl.) Henssen Syns.: *Leptogidium intricatum*, *Polychidium intricatum*
umhausense (Auersw.) Degel. Syn.: *Polychidium umhausense*

DENDRISCOSTICTA B. Moncada & Lücking (Moncada et al. 2013)

oroborealis (Goward & Tønsberg) B. Moncada & Lücking Syn.: *Sticta oroborealis* (Moncada et al. 2013)

wrightii (Tuck.) B. Moncada & Lücking Syn.: *Sticta wrightii* (Moncada et al. 2013)

DENDRODOCHIUM Bonord

***subeffusum** Ellis & Everh.

DENDROGRAPHA Darb.

alectoroides Sundin & Tehler (Sundin & Tehler 1996)
conformis (Tehler) Ertz & Tehler (Ertz & Tehler 2011)
decolorans (Turner & Borrer ex Sm.) Ertz & Tehler (Ertz & Tehler 2011)
franciscana (Zahlbr. ex Herre) Ertz & Tehler (Ertz & Tehler 2011)
leucophaea (Tuck.) Darb. Syn.: *Rocella leucophaea*
minor Darb. = *D. leucophaea* (Tuck.) Darb. (Sundin & Tehler 1996)

DERMATINA (Almq.) Zahlbr. = PEZICULA

"*pyrenocarpa*" (Nyl.) Zahlbr. = *Mycoporum compositum*

DERMATISCUM Nyl.

catawbense (Willey) Nyl. = *Dermiscellum oulocheila*

DERMATOCARPON Eschw.

americanum Vainio (Heidmarsson & Breuss 2004)
arenosaxi Amtoft (Amtoft et al. 2008)
arnoldianum Degel.
atrogranulosum Breuss (Breuss 2003)
bachmannii Anders (Heidmarsson & Breuss 2004)
dolomiticum Amtoft (Amtoft et al. 2008)
intestiniforme (Körber) Hasse
leptophyllodes (Nyl.) Zahlbr. (Heidmarsson & Breuss 2004)
linkolae Räsänen (Goward et al. 1996)
lorenzianum Anders
luridum (With.) J. R. Laundon
luridum var. **xerophilum** Amtoft (Amtoft et al. 2008)
meiophyllizum Vainio (Glavich & Geiser 2004)
miniaturum (L.) W. Mann Syn.: *Endocarpon miniaturum*
moulinsii (Mont.) Zahlbr.
muhlenbergii (Ach.) Müll. Arg. (Amtoft et al. 2008)
multifolium Amtoft (Amtoft et al. 2008)

polyphyllizum (Nyl.) Blomb. & Forssell (Heidmarsson & Breuss 2004)
reticulatum H. Magn.
rivulorum (Arnold) Dalla Torre & Sarnth.
 [Entosthelia saxicola B. de Lesd.]
schaechtelinii Werner (Heidmarsson & Breuss 2004)
taminium Heipmarsson (Heidmarsson 2003)
tenue (Müll. Arg.) Heidmarsson (Heidmarsson 2003)
tomentulosum Amtoft (Amtoft 2006)
vellereum Zschacke
 acarosporoides Zahlbr. = Placidium acarosporoides
 aquaticum (Weiss) Zahlbr. = D. luridum
 arboreum (Schwein.) Fink = Placidium arboreum
 cinereum (Pers.) Th. Fr. = Catapyrenium cinereum
 #compactum (A. Massal.) Lettau = Heteroplacidium compactum
 daedaleum (Kremp.) Th. Fr. = Catapyrenium daedaleum
 fluviatile (Weber) Th. Fr. = D. luridum
 granulorum (B. de Lesd.) Zahlbr. = Catapyrenium granulorum
 hepaticum auct. = Placidium squamulosum
 hepaticum (Ach.) Th. Fr. = Catapyrenium cinereum
 heppioides Zahlbr. = Placopyrenium heppioides
 lachneum (Ach.) A. L. Sm. = Placidium lachneum
 lecideoides (A. Massal.) Hasse = Placopyrenium lecideoides
 leptophyllum (Ach.) Lång = D. miniatum
 lyngaei Servit Reported from Greenland and Iceland but not U. S. or Canada
 michelii (A. Massal.) Zwackh = Placidium michelii
 miniatum (L.) W. Mann var. complicatum (Lightf.) Th. Fr. = D. miniatum (Heidmarsson 2003)
 novomexicanum (B. de Lesd.) Zahlbr. = Placidium acarosporoides
 peltatum (Taylor) Zahlbr. = a sterile psoroid lichen; a misidentification for North America
 plumbeum (B. de Lesd.) Zahlbr. = Verrucaria inficiens
 polyphyllum (Wulfen) Dalla Torre & Sarnth. = D. intestiniforme
 rufescens (Ach.) Th. Fr. = Placidium rufescens
 rupicola (B. de Lesd.) Zahlbr. = Verrucaria othmarii (Knudsen & Kocourková 2012a)
 squamellum (Nyl.) Herre = Catapyrenium squamellum
 tuckermanii (Rav. ex Mont.) Zahlbr. = Placidium arboreum
 vagans Imshaug = D. reticulatum H. Magn.
 waltheri (Kremp.) Blomb. & Forssell = Involucropyrenidium waltheri
 weberi (Ach.) W. Mann = D. luridum
 zahlbruckneri Hasse = Placopyrenium stanfordii

DERMISCELLUM Hafellner, H. Mayrhofer & Poelt

oulocheila (Tuck.) Lendemer Syn.: Dermaticum catawbense, Opegrapha oulocheila (Lendemer 2003)
 catawbense (Willey) Hafellner & Poelt = D. oulocheila

DESMAZIERIA Mont.

cephalota (Tuck.) Follmann & Huneck = Vermilacinia cephalota
 ceruchis (Ach.) Trevisan = Vermilacinia ceruchis, but absent from North America (Spjut 1996)
 combeoides (Nyl.) Follmann & Huneck = Vermilacinia combeoides
 evernioides (Nyl.) Follmann & Huneck = Ramalina lacera
 homalea (Ach.) Mont. = Niebla homalea
 peruviana (Ach.) Follmann & Huneck = Ramalina peruviana
 testudinaria (Nyl.) Follmann & Huneck = Niebla homalea

DIBAEIS Clem.

absoluta (Tuck.) Kalb & Gierl Syn.: Baeomyces absolutus
baeomyces (L. f.) Rambold & Hertel Syn.: Baeomyces roseus

fungoides (Sw.) Kalb & Gierl = A tropical species, not in North America
rosea (Pers.) Clem. = D. baeomyces

DICTYOCATENULATA Finley & E. F. Morris
alba Finley & E. F. Morris (Lendemer & Harris 2004)

DICTYONEMA C. Agardh
moorei (Nyl.) Henssen
phyllogenum (Müll. Arg.) Zahlbr. (Lücking et al. 2011b)
sericeum (Sw.) Berk.
glabratum (Sprengel) D. Hawksw. = Cora glabrata
guadalupense (Rabenh.) Zahlbr. = D. sericeum
irpicinum Mont. = misidentification for North America
pavonium (Sw.) Parmasto = Cora glabrata, for North American reports

DIDYMELLOPSIS (P. A. Saccardo) Clem. & Shear
***latitans** (Nyl.) Clem. & Shear (Zhurbenko 2009a)
***pulposi** (Zopf) Grube & Hafellner (Zhurbenko 2013)

DIDYMOCYRTIS Vainio
***bryonthae** (Arnold) Hafellner Syn.: Polycoccum bryonthae (Ertz et al. 2015a)
***cladoniicola** (Diederich, Kocourk. & Etayo) Ertz & Diederich Syn.: Phoma cladoniicola (Ertz et al. 2015a)
***consimilis** Vainio (Ertz et al. 2015a)
***epiphyscia** Ertz & Diederich Syn.: Phoma physciicola (Ertz et al. 2015a)
***melanelixiae** (Brackel) Diederich, Harris & Etayo (Ertz et al. 2015a)
***xanthomendozae** (Diederich & Freebury) Diederich & Freebury Syn.: Phoma xanthomendozae (Ertz et al. 2015a)

DIDYMOSPHERA Fuckel
***epicrassa** (H. Olivier) Vouaux = Clypeococcum epicrassum, but see note there

DIGITOTHYREA P. P. Moreno & Egea
divergens (Henssen) Moreno & Egea (Sweat et al. 2004)
polyglossa (Nyl.) P. P. Moreno & Egea (Schultz 2002b)

DIMELAENA Norman
#**californica** (H. Magn.) Sheard
#**lichenicola** K. Knudsen, Sheard, Kocourk. & H. Mayrhofer (Knudsen et al. 2013b)
oreina (Ach.) Norman Syns.: Rinodina oreina, R. hueana, R. novomexicana, R. suboreina
radiata (Tuck.) Müll. Arg. (Matzer et al. 1996) Syns.: Buellia radiata, Rinodina radiata
tenuis (Müll. Arg.) H. Mayrhofer & Wippel (Beeching 2007)
thysanota (Tuck.) Hale & W. L. Culb. Syn.: Rinodina thysanota
weberi Sheard
angelica (Stizenb.) Hale & W. L. Culb. = Mobergia angelica
chrysomelaena (Ach.) Hale & W. L. Culb. = Rinodina chrysomelaena
novomexicana (B. de Lesd.) Hale & W. L. Culb. = D. oreina
suboreina (B. de Lesd.) Hale & W. L. Culb. = D. oreina

DIMERELLA Trevisan = COENOGONIUM (Lücking & Kalb 2000)
diluta (Pers.) Trevisan = Coenogonium pineti
lutea (Dickson) Trevisan = Coenogonium luteum
pineti (Ach.) Vězda = Coenogonium pineti

DIMIDIOGRAPHIA Ertz & Tehler (Ertz & Tehler 2011)
longissima (Müll. Arg.) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Graphis, atrorubens, Opegrapha

longissima

DINEMASPORIUM Lév.

***strigosum** (Fr.) Sacc. (Alstrup & Cole 1998)

DIORYGMA Eschw.

antillarum (Vainio) Nelsen, Lücking & Rivas Plata (Nelsen et al. 2012) Syn.: Herpothallon antillarum

basinigrum F. Seavey & J. Seavey (Seavey & Seavey 2014a)

junghuhnii (Mont. & Bosch) Kalb, Staiger & Elix (Tripp et al. 2010)

microsporum M. Cáceres & Lücking (Lumbsch et al. 2011; Lücking et al. 2011b)

poitaei (Fée) Kalb, Staiger & Elix (Kalb et al. 2004) Syn.: Graphina virginea

pruinsum (Ehrh.) Kalb Syn.: Graphina platyleuca (Tripp et al. 2010)

reniforme (Fée) Kalb, Staiger, & Elix (Tripp et al. 2010)

DIPLOICIA A. Massal.

canescens (Dickson) A. Massal. Syn.: Buellia canescens

DIPLOLAEVIOPSIS Giralt & D. Hawksw.

***ranula** Giralt & D. Hawksw. (Diederich 2003)

DIPLOSCHISTELLA Vainio

athalloides (Nyl.) Lücking, Knudsen & Fryday (Lücking et al. 2007) Syn.: Rhizocarpon athalloides

DIPLOSCHISTES Norman

actinostomus (Ach.) Zahlbr. Syn.: Urceolaria actinostoma

aeneus (Müll. Arg.) Lumbsch

arabiensis Lumbsch

badius Lumbsch & Elix

caesioplumbeus (Nyl.) Vainio (Lumbsch 2002)

candidissimus (Kremp.) Zahlbr. (Esslinger & Egan 1995)

diacapsis (Ach.) Lumbsch Syn.: Urceolaria albissima

gypsaceus (Ach.) Zahlbr.

hypoleucus Zahlbr.

muscorum (Scop.) R. Sant. subsp. **muscorum**

scruposus (Schreber) Norman Syn.: Urceolaria scruposa

albissimus (Ach.) Dalla Torre & Sarnth. = D. diacapsis

bisporus (Bagl.) J. Steiner = Ingvariella bisporus

bryophilus (Ehrh. ex Ach.) Zahlbr. = D. muscorum subsp. muscorum

canadensis Räsänen = D. muscorum subsp. muscorum

scruposus (Schreber) Norman var. parasiticus (Sommerf.) Zahlbr. = D. muscorum

stramineus Zahlbr. = D. hypoleucus

DIPLOTOMMA Flotow

alboatrum (Hoffm.) Flotow Syns.: Buellia alboatra, Rhizocarpon alboatrum

ambiguum (Ach.) Flagey Syn.: Buellia ambigua

chlorophaeum (Hepp ex Leighton) Szatala Syns.: Rhizocarpon chlorophaeum, Buellia chlorophaea

epipolium (Ach.) Arnold Syns.: Buellia epipolia, Rhizocarpon cumulatum

nivalis (Bagl. & Carestia) Hafellner (Hafellner & Türk 1995) Syn.: Buellia nivalis

penichrum (Tuck.) Szatala Syns.: Buellia penichra, Rhizocarpon penichrum

venustum (Körber) Körber Syn.: Buellia venusta, B. lecanoroides

***pulverulentum** (Anzi) D. Hawksw. (Molina et al. 2002) = Tetramelas pulverulentus

DIRINA Fr.

catalinariae Hasse

massiliensis Durieu & Mont. (Harris & Ladd 2005; reported as f. soledata)

paradoxa (Fée) Tehler

approximata Zahlbr. subsp. hioramii (B. de Lesd.) Tehler = *D. paradoxa*
calcicola Sparrius (Sparrius 2004a) = *Fulvophyton calcicola* (Tehler et al. 2013)
californica Tuck. = *Sigridea californica*
franciscana Zahlbr. ex Herre = *Dendrographa franciscana*
hassei Zahlbr. = *Sigridea californica*
rediunta Hasse = *Schismatomma rediunta*

DIRINARIA (Tuck.) Clem.

aegialita (Afz.) B. J. Moore Syn.: *Physcia aspera*, *P. aegialita*
applanata (Fée) D. D. Awasthi
confluens (Fr.) D. D. Awasthi
confusa D. D. Awasthi
confusa var. **saxicola** (Räsänen) D. D. Awasthi
frostii (Tuck.) Hale & W. L. Culb. Syn.: *Physcia frostii*, *Pyxine frostii*
leopoldii (Stein) D. D. Awasthi
neotropica Kalb (Kalb 2004a)
papillulifera (Nyl.) D. D. Awasthi
picta (Sw.) Clem. & Shear Syn.: *Physcia picta*, *Pyxine picta*
purpurascens (Vainio) B. J. Moore Syn.: *Physcia purpurascens*
aspera (H. Magn.) D. D. Awasthi = *D. aegialita*

DISCOTHECIUM Zopf = **ENDOCOCCUS** Nyl.

**gemmiferum* Vouaux = an uncertain species of *Endococcus*

DISTOPYRENIS Aptroot

americana Aptroot
pachyospora Aptroot (Harris 1995a)
quercicola R. C. Harris (Harris 1995a)
submuriformis R. C. Harris (Harris 1995a)

DITREMIS Clem. = **ANISOMERIDIUM**

albiseda (Nyl.) R. C. Harris = *Anisomeridium albisedum*
ambigua (Zahlbr.) R. C. Harris = *Anisomeridium ambiguum*
anisoloba (Müll. Arg.) R. C. Harris = *Anisomeridium anislobum*
biformis (Borrer) R. C. Harris = *Anisomeridium biforme*
carinthiaca (Steiner) R. C. Harris = *Anisomeridium carinthiacum*
distans (Willey) R. C. Harris = *Anisomeridium distans*
finkii R. C. Harris = *Anisomeridium finkii*
leucochlora (Müll. Arg.) R. C. Harris = *Anisomeridium leucochlorum*
macrospora R. C. Harris = *Anisomeridium aureopunctatum*
nyssigena (Ellis & Everh.) R. C. Harris = *Anisomeridium polypori*
quaternaria R. C. Harris = *Anisomeridium quaternarium*
sanfordensis (Zahlbr.) R. C. Harris = *Anisomeridium excaecariae*
subprostans (Nyl.) R. C. Harris = *Anisomeridium subprostans*
tamarindii (Fée) R. C. Harris = *Anisomeridium tamarindii*
terminata (Nyl.) R. C. Harris = *Anisomeridium terminatum*
tuckerae (R. C. Harris) R. C. Harris = *Anisomeridium tuckerae*

DUFOUREA Ach.

madreporiformis (Ach.) Ach. = *Allocetraria madreporiformis*

DYPLOLABIA A. Massal.

afzelii (Ach.) A. Massal. Syn.: *Graphis afzelii* (Staiger 2002)

ECHINODISCUS Etayo & Diederich

***lesdainii** (Vouaux) Etayo & Diederich (Kocourková et al. 2010)

ECHINOPLACA Fée

- areolata** Lücking & W. R. Buck (Lücking et al. 2007)
- basalis** W. B. Sanders & Lücking (Sanders & Lücking 2015)
- furcata** Sérus. subsp. neotropica Lücking (Lücking et al. 2007)
- intercedens** Vězda
- leucotrichoides** (Müll. Arg.) R. Sant. (Lücking et al. 2011b)
- lucernifera** Kalb & Vězda (Lücking et al. 2007)
- pellicula** (Müll. Arg.) R. Sant.
- similis** Kalb & Vězda (Lücking et al. 2007)
- tetraplaca** (Zahlbr.) Lücking (Lücking et al. 2007)

ECHINOTHECIUM Zopf

- ***aerophilum** Alstrup & M. S. Cole (Alstrup & Cole 1998)
- ***reticulatum** Zopf = *Sphaerellothecium reticulatum*

EDRUDIA W. P. Jordan

- constipans** (Nyl.) W. P. Jordan Syn.: *Caloplaca constipans*, *Lecanora constipans*

EIGLERA Hafellner

- flavida** (Hepp) Hafellner Syns.: *Lecanora flavida*, *Aspicilia flavida*

ELIXIA Lumbsch

- flexella** (Ach.) Lumbsch (Spribille & Björk 2008)

ENCHYLIUM (Ach.) Gray (Otálora et al. 2014)

- bachmanianum** (Fink) Otálora, P. M. Jørg. & Wedin Syns.: *Collema bachmanianum*, *Collemodes bachmanianum*
- coccophorum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema coccophorum*, *C. dubium*, *C. novomexicanum*, *Synechoblastus coccophorus*
- conglomeratum** (Hoffm.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema conglomeratum*, *C. pycnocarpum*, *Synechoblastus ohioense*, *S. cyrtaspis*, *S. pycnocarpus*
- expansum** (Degel.) P. M. Jørg. Syn.: *Collema tenax* var. *expansum* (Jørgensen & Goward 2015)
- limosum** (Ach.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema glaucescens*, *C. limosum*
- polycarpon** (Hoffm.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema polycarpon*, *Synechoblastus polycarpus*, *S. wyomingensis*
- substellatum** (H. Magn.) P. M. Jørg. (Jørgensen & Goward 2015)
- tenax** (Sw.) Gray Syn.: *Collema tenax*

ENDOCARPON Hedwig

- adscendens** (Anzi) Müll. Arg.
- adsurgens** Vainio
- diffractellum** (Nyl.) Gueidan & Cl. Roux (Gueidan et al. 2007) Syns.: *Staurothele diffractella*, *Verrucaria diffractella*
- lepidallum** Nyl.
- loscosii** Müll. Arg. (Breuss 2002a)
- pallidulum** (Nyl.) Nyl. (Breuss 2002a)
- pallidum** Ach.
- petrolepideum** (Nyl.) Nyl.
- pseudosubnitescens** Breuss (Knudsen 2005b)
- pulvinatum** Th. Fr. Syns.: *Pyrenothamnia brandegei*, *P. spraguei*
- pusillum** Hedwig
- schisticola** B. de Lesd. (Breuss 2002a)
- simplicatum** (Nyl.) Nyl. (Breuss 2002a)
- subnitescens** Nyl.
- tenuissimum** (Degel.) Lendemer & E. Tripp Syn.: *Staurothele tenuissima* (Lendemer et al. 2013)

tortuosum Herre

arboreum Schwein. (Mohr 1901) = *Placidium arboreum*

drummondii (Tuck.) M. Choisy = *Staurothele drummondii*

miniaturum (L.) Schaerer (Mohr 1901) = *Dermatocarpon miniaturum*

moenium Vainio = *Acarospora moenium*

monicae Zahlbr. = *Staurothele monicae*

*ochroleucum Tuck. = *Heterocarpon ochroleucum*

tuckermanii Rav. ex Mont. = *Placidium arboreum* (Lendemer & Yahr 2004)

wilmsoides Zahlbr. = *Staurothele drummondii*

ENDOCOCCUS Nyl.

***apiciicola** (J. Steiner) R. Sant. (Diederich 2003)

***incrassatus** Etayo & Breuss (Knudsen & Kocourková 2008b)

***macrosporus** (Arnold) Nyl. (Hafellner et al. 2002)

***matzeri** D. Hawksw. & Iturr. (Knudsen & Kocourková 2009b)

***nanellus** Ohlert (Diederich 2003)

***oreinae** Hafellner (Hafellner et al. 2002)

***perpusillus** Nyl.

***propinquus** (Körber) D. Hawksw.

***rugulosus** Nyl. (Knudsen & Kocourková 2010b)

***stigma** (Körber) Stizenb. (Hafellner et al. 2002)

***thelommatis** Kocourk. & K. Knudsen (Kocourková & Knudsen 2011)

***verrucosus** Hafellner (Hafellner et al. 2002)

***zahlbrucknerellae** (Henssen) D. Hawksw. Syn.: *Ticothecium zahlbrucknerella*

***buelliae** (C. W. Dodge) Matzer (Matzer et al. 1996) = *E. matzeri* for North American reports

ENDOHYALINA Marbach

ericina Giralt, van den Boom & Elix var. **ericina** (Giralt et al. 2010)

***insularis** (Arnold) Giralt, van den Boom & Elix Syn.: *Rinodina insularis* (Nadyeina et al. 2010)

rappii (Imshaug ex R. C. Harris) Marbach Syn.: *Buellia rappii* (Marbach 2000)

circumpallida (H. Magn.) Marbach (Marbach 2000) = *Buellia circumpallida* (Giralt et al. 2010)

ENDOPYRENIUM Flotow

americanum B. de Lesd. = *Verrucaria americana*

bajadanae B. de Lesd. = *Placidium acarosporoides*

crustaceum B. de Lesd. = *Catapyrenium granulosum*

granulosum B. de Lesd. = *Catapyrenium granulosum*

novomexicanum B. de Lesd. = *Placidium acarosporoides*

plumbeum B. de Lesd. = *Verrucaria inficiens*

rupicola B. de Lesd. = *Verrucaria othmarii*

tuckermanii (Rav. ex Mont.) Müll. Arg. = *Placidium arboreum*

ENTEROGRAPHA Fée

anguinella (Nyl.) Redinger (Sparrius 2004b) Syn.: *Schismatomma pallidellum* auct.

bradleyana F. Seavey & J. Seavey (Seavey & Seavey 2014b)

caudata F. Seavey & J. Seavey (Seavey & Seavey 2014b)

hutchinsiae (Leighton) A. Massal. (Sparrius 2004b)

murrayana F. Seavey & J. Seavey (Seavey & Seavey 2014b)

nitidula F. Seavey & J. Seavey (Seavey & Seavey 2014b)

oregonensis Sparrius & Björk (Sparrius & Björk 2008)

***osagensis** C. A. Morse (Morse 2013)

pallidella (Nyl.) Redinger (Seavey & Seavey 2012)

quassiicola Fée

subserialis (Nyl.) Redinger (Seavey & Seavey 2014a)

zonata (Körber) Källsten Syn.: *Opegrapha zonata* (Ertz et al. 2009)

carnea (Eckfeldt) R. C. Harris = *Mazosia ocellata*

elegans (Eschw.) Tuck. = Sclerophyton elegans
lecanoroides R. C. Harris = E. anguinella

ENTEROSTIGMA Müll Arg.

montagnaei (Tuck) Fink (Fink 1935) = Cryptothecia striata(Thor 1991)

ENTOSTHELIA (Wallr.) Hue

saxicola B. de Lesd. = unknown Dermatocarpon sp.

EOPYRENULA R. C. Harris

intermedia Coppins Syn.: Pyrenula leucoplaca var. pluriloculata

parvispora R. C. Harris & Aptroot

leucoplaca (Wallr.) R. C. Harris = misidentification for North America (fide R. Harris)

EPAPHROCONIDIA Calatayud & V. Atienza

***hawksworthii** Calatayud & V. Atienza (Diederich 2003)

EPHEBE Fr.

americana Henssen

hispidula (Ach.) Horw. Syn.: Ephebeia hispidula

lanata (L.) Vainio

ocellata Henssen

perspinulosa Nyl.

solida Bornet

mamillosum (Lyngb.) E. Fr. (Fink 1935) Possibly Stigonema mamillosum, a cyanobacterium

pubescens (Ach.) Fr. = Pseudephebe pubescens

EPHEBEIA Nyl. = EPHEBE

hispidula (Ach.) Nyl. = Ephebe hispidula

EPICLADONIA D. Hawksw.

***sandstedei** (Zopf) D. Hawksw. (Scholz 1998)

***simplex** D. Hawksw. (Esslinger & Egan 1995)

EPICOCCUM Link

***purpurascens** Schltdl. (Diederich 2003)

EPIGLOEA Zukał

intermedia Döbbeler (Lendemer & Harris 2004)

medioincrassata (Grumann) Döbbeler (Fryday 2004a)

pleiospora Döbbeler (Buck & Harris 2002)

renitens (Grumann) Döbbeler (Spribille et al. 2010)

soleiformis Döbbeler (Buck & Harris 2002)

EPILICHEN Clem.

#**glauconigellus** (Nyl.) Hafellner (Zhurbenko 2009a)

***scabrosus** (Ach.) Clem. Syn.: Buellia scabrosa

***stellatus** Triebel

EPITHAMNOLIA Zhurb. (Zhurbenko 2012)

***karatyginii** Zhurb.

ERINACELLUS T. Sprib., Muggia & Tønsberg (Spribille et al. 2014b)

dendroides (Henssen) T. Sprib., Muggia & Tønsberg Syn.: Sponema dendroides

ERIODERMA Fée

mollissimum (Samp.) Du Rietz
pedicellatum (Hue) P. M. Jørg.
sorediatum D. J. Galloway & P. M. Jørg.
boreale Ahlner = E. pedicellatum

ERYTHRICIUM J. Erikss. & Hjortstam (Hawksworth & Helcini 2015)

***aurantiacum** (Lasch) D. Hawksw. & A. Henrici Syn.: *Marchandiobasidium aurantiacum*
(Hawksworth & Helcini 2015)

ESCHATOGONIA Trevisan

prolifera (Mont.) R. Sant. (Seavey et al. 2014)

ESSLINGERIANA Hale & M. J. Lai

idahoensis (Essl.) Hale & M. J. Lai Syn.: *Cetraria idahoensis*

ETAYOA Diederich & Ertz (Ertz et al. 2014)

***trypethelii** (Flakus & Kukwa) Diederich & Ertz

EUGENIELLA Lücking, Sérus. & Kalb (Lücking et al. 2011b)

leucocheila (Tuck.) Lücking, Sérus. & Kalb (Lücking et al. 2011b)

EUOPSIS Nyl.

granatina (Sommerf.) Nyl. Syns.: *Pyrenopsis granatina*, *Lecanora granatina*, *Pannaria granatina*
pulvinata (Schaerer) Nyl. Syn.: *Pyrenopsis pulvinata*

EVERNIA Ach.

divaricata (L.) Ach.
mesomorpha Nyl.
perfragilis Llano
prunastri (L.) Ach.
ceratea (Ach.) Zopf (Fink 1935) = *Pseudevernia furfuracea* (L.) Zopf, but a misidentification for North America
esorediosa (Müll. Arg.) Du Rietz = misidentification for North America (Bird 1974)
furfuracea (L.) W. Mann = *Pseudevernia consocians* and *P. intensa* for North American records
thamnodes (Flotow) Arnold = *E. mesomorpha*
vulpina (L.) Ach. = *Letharia vulpina*

EVERNIASTRUM Hale ex Sipman = **HYPOTRACHYNA** (Divakar et al. 2013)

catawbiense (Degel.) Hale ex Sipman = *Hypotrachyna catawbiensis*
sorocheilum (Vainio) Hale ex Sipman = *Hypotrachyna sorocheila*, but reports apparently based on *H. catawbiense*

EVERNIICOLA D. Hawksw.

***flexispora** D. Hawksw.

FARNOLDIA Hertel

hypocrita (A. Massal.) Fröberg Syns.: *Lecidea hypocrita*, *L. lithospersa*, *L. ypocrita*
jurana (Schaerer) Hertel Syns.: *Lecidea jurana*, *L. albosuffusa*, *Tremolecia jurana*, *Melanolecia jurana*
micropsis (A. Massal.) Hertel Syns.: *Lecidea rhaetica*, *Melanolecia micropsis*, *Tremolecia nivalis*, *T. micropsis*

FAYODIA Kühner

***leucophylla** (Gillet) M. T. Lange = *Gamundia leucophylla* (Bigelow 1983)
***striatula** (Kühner) Singer = *Gamundia striatula* (Raitelhuber 1983)

FELLHANERA Vězda

- aurantiaca** (Vězda) Vězda Syn.: *Bacidia aurantiaca*
- bouteillei** (Desm.) Vězda Syn.: *Catillaria bouteillei*
- crucitignorum** C. A. Morse & Ladd (Morse & Ladd 2013)
- eriniae** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- fallax** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- floridana** (Tuck.) S. Ekman Syn.: *Bacidia floridana*, *Biatora floridana*, *Bilimbia floridana*
- granulosa** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- hybrida** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- minnisinkorum** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- montesfumosi** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- rhapidophylli** (Rehm)Vězda (Seavey & Seavey 2014a)
- silicis** R. C. Harris & Ladd (Harris & Lendemer 2009)
- subtilis** (Vězda) Diederich & Sérus. (Goward et al. 1996)

FELLHANEROPSIS Sérus. & Coppins

- myrtillicola** (Erichsen) Sérus. & Coppins (Lendemer & Knudsen 2011)
- vezdae** (Coppins & P. James) Sérus. & Coppins (Tønsberg 1997)

FIBRILLITHECIS A. Frisch (Frisch 2006)

- confusa** Lücking, Kalb & Rivas Plata (Rivas Plata et al. 2010)
- insignis** (Zahlbr.) A. Frisch (Frisch 2006) = *F. confusa* (Rivas Plata et al. 2010)

FISSURINA Fée

- aggregatula** Common & Lücking (Lücking et al. 2011b)
- alligatorensis** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- americana** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- analphabetica** Common & Lücking (Lücking et al. 2011b)
- cingalina** (Nyl.) Staiger (Lücking et al. 2011b)
- columbina** (Tuck.) Staiger Syns.: *Graphina columbina*, *G. virginalis*, *Graphis columbina*, *Phaeographina columbina* (Staiger 2002)
- confusa** Common & Lücking (Lücking et al. 2011b)
- crassilabra** Mont. & Bosch (Lücking et al. 2011b)
- cypressi** (Müll. Arg.) Lendemer Syn.: *Graphina cypressi* (Lendemer 2007a)
- dumastioides** (Fink) Staiger Syn.: *Graphina dumastioides*, *Graphis dumastioides* (Staiger 2002)
- egena** (Nyl.) Nyl. (Lücking et al. 2011b)
- humilis** (Vainio) Staiger (Staiger & Kalb 2004)
- ilicicola** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- illiterata** (R. C. Harris) Lendemer Syn.: *Graphis illiterata* (Lendemer & Knudsen 2008b)
- incrustans** Fée Syns.: *Graphina incrustans*, *G. glaucoderma*, *Graphis incrustans* (Staiger 2002)
- insidiosa** C. Knight & Mitten Syn.: *Graphis beaumontii*, *G. insidiosa* (Staiger 2002)
- inspersa** Common & Lücking (Lücking et al. 2011b)
- insculpta** Mont. Syn.: *Graphina babingtonii* (Staiger 2002, Tripp et al. 2010)
- leuconephela** Nyl. Syn. : *Graphina leuconephela* (Staiger 2002, Tripp et al. 2010)
- mexicana** (Zahlbr.) Lücking & Rivas Plata (Lücking et al. 2011b)
- nitidescens** (Nyl.) Nyl. Syns.: *Graphina nitidescens*, *Graphis nitidescens* (Staiger 2002)
- pseudostromatica** Lücking & Rivas Plata (Lücking et al. 2011b)
- radiata** Mont. (Lücking et al. 2011b)
- rufula** (Mont.) Staiger Syn.: *Graphis rufula* (Staiger 2002)
- scolecitis** (Tuck.) Lendemer Syns.: *Graphina scolecitis*, *Graphis scolecitis* (Lendemer 2007a) North American records of *Graphina adscribens* belong here
- subcomparimuralis** Common & Lücking (Lumbsch et al. 2011; Lücking et al. 2011b)
- subnitida** (Nyl.) Zahlbr. (Staiger 2002, Tripp et al. 2010)
- subnitidula** (Nyl.) Staiger Syns.: *Graphina subnitidula*, *Graphis subnitidula* (Staiger 2002)
- tachygrapha** (Nyl.) Staiger (Lücking et al. 2011b)
- tuckermaniana** Common & Lücking (Lücking et al. 2011b)

varieseptata Common & Lücking (Lücking et al. 2011b)
subcontexta (Nyl.) Nyl. = *F. rufula* (Lücking et al. 2011b)

FISTULARIELLA Bowler & Rundel

almquistii (Vainio) Bowler & Rundel = *Ramalina almquistii*
dilacerata (Hoffm.) Bowler & Rundel = *Ramalina dilacerata*
geniculata (Hooker f. & Taylor) Bowler & Rundel = *Ramalina geniculata*
inflata (Hooker f. & Taylor) Bowler & Rundel = *Ramalina inflata*
minuscula (Nyl.) Bowler & Rundel = *Ramalina dilacerata*
roesleri (Hochst. ex Schaerer) Bowler & Rundel = *Ramalina roesleri*
scoparia (Vainio) Bowler & Rundel = *Ramalina scoparia*

FLAKEA O. E. Erikss. (Hansen 2003; Perlmutter 2006)

papillata O. E. Erikss. (Hansen 2003; Perlmutter 2006)

FLAVOCETRARIA Kärnefelt & A. Thell

cucullata (Bellardi) Kärnefelt & A. Thell Syns.: *Cetraria cucullata*, *Allocetraria cucullata*
minuscula (Elenkin & Savicz) Ahti, Poryadina & Zhurb. (Zhurbenko et al. 2005)
nivalis (L.) Kärnefelt & A. Thell Syns.: *Cetraria nivalis*, *Allocetraria nivalis*

FLAVOPARMELIA Hale

baltimorensis (Gyelnik & Fóris) Hale Syns.: *Parmelia baltimorensis*, *Pseudoparmelia baltimorensis*
caperata (L.) Hale Syns.: *Parmelia caperata*, *P. cylisphora*, *P. flavicans*, *P. herreana*, *P. negativa*, *Pseudoparmelia caperata*
rutidota (Hooker f. & Taylor) Hale Syns.: *Parmelia rutidota*, *Pseudoparmelia rutidota*, and *P. conspersa* var. *subconspersa* and *Xanthoparmelia subconspersa* for North American records.
subcapitata (Nyl. ex Hasse) Hale ex DePriest & B. Hale (Knudsen et al. 2005) Syn.: *Parmelia subcapitata*
[*Parmelia concreta* Stizenb.] This name was apparently never effectively published; identified as an uncertain species of *Flavoparmelia* by Hale & DePriest (1999), although an apparent ‘type’ specimen in FH was annotated by Mason Hale as an *Aspicilia* sp.

FLAVOPLACA Arup, Søchting & Frödén (Arup et al. 2013)

austrocitrina (Vondrák, Říha, Arup & Søchting) Arup, Søchting & Frödén Syn.: *Caloplaca austrocitrina*
citrina (Hoffm.) Arup, Frödén & Søchting Syn.: *Caloplaca citrina*
flavocitrina (Nyl.) Arup, Frödén & Søchting Syn.: *Caloplaca flavocitrina*
granulosa (Müll. Arg.) Arup, Frödén & Søchting Syn.: *Caloplaca granulosa*
marina (Wedd.) Arup, Frödén & Søchting Syn.: *Caloplaca marina*
microthallina (Wedd.) Arup, Frödén & Søchting Syn.: *Caloplaca microthallina*

FLAVOPUNCTELIA (Krog) Hale

darrowi (J. W. Thomson) Hale Syns.: *Parmelia darrowi*, *Punctelia darrowi*
flaventior (Stirton) Hale Syns.: *Parmelia flaventior*, *P. andreana*, *P. kernstockii*, *Punctelia flaventior*
praesignis (Nyl.) Hale Syns.: *Parmelia praesignis*, *P. incorrupta*, *P. caperata* var. *incorrupta*, *Punctelia praesignis*
soredica (Nyl.) Hale Syns.: *Parmelia soredica*, *P. ulophyllodes*, *P. manshurica*, *Punctelia soredica*

FORAMINELLA S. F. Meyer = **PARMELIOPSIS**

FORSSELLIA Zahlbr. = **PTERYGIOPSIS**

minnesotensis (Fink) Fink = *Lichinella minnesotensis*
neglecta Erichsen = *Pterygiopsis neglecta*

FOURAGEA Trevisan (Frisch et al. 2014)

filicina (Mont.) Trevisan Syn.: *Opegrapha filicina* (Frisch et al. 2014)

FRUTIDELLA Kalb (Kalb 1994)

caesioatra (Schaerer) Kalb (Kalb 1994) Syn.: *Lecidea caesioatra*, *L. arctica*

pullata (Norman) Schmull (Schmull et al. 2011) Syns.: *Biatora pullata*, *Lecidea pullata*

FULGENSIA A. Massal. & De Not. = **GYALOLECHIA** (Arup et al. 2013)

bracteata (Hoffm.) Räsänen subsp. **bracteata** = *Gyalolechia bracteata* subsp. **bracteata**

bracteata subsp. **bracteata** var. **alpina** (Th. Fr.) Poelt = *Gyalolechia bracteata* subsp. **bracteata** var. **alpina**

bracteata subsp. **deformis** Poelt (Esslinger & Egan 1995) = *Gyalolechia bracteata* subsp. **deformis**

desertorum (Tomin) Poelt = *Gyalolechia desertorum*

fulgens (Sw.) Elenkin = *Gyalolechia fulgens*

subbracteata (Nyl.) Poelt (Brodo et al. 2001, Kasalicky 2004) = *Gyalolechia subbracteata*

FULGIDEA Bendiksby & Timdal (Bendiksby & Timdal 2013)

oligospora (Timdal) Bendiksby & Timdal Syn.: *Hypocenomyce oligospora*

sierrae (Timdal) Bendiksby & Timdal Syn.: *Hypocenomyce sierrae*

FULVOPHYTON Ertz & Tehler

calicicola (Sparrius) Tehler & Ertz Syn.: *Dirina calicicola* (Tehler et al. 2013)

FUSARIUM Link

***peltigerae** Westend. (Spribille et al. 2010)

FUSCIDEA V. Wirth & Vězda

aleutica (Degel.) Fryday (Fryday 2008)

appalachensis Fryday (Fryday 2008)

arboricola Coppins & Tønsberg

gothoburgensis (H. Magn.) V. Wirth & Vězda (Fryday 2006)

intercincta (Nyl.) Poelt

lowensis (H. Magn.) R. A. Anderson & Hertel Syn.: *Lecidea lowensis*

mollis (Wahlenb.) V. Wirth & Vězda Syn.: *Lecidea mollis*

praeruptorum (Du Rietz & H. Magn.) V. Wirth & Vězda Syn.: *Lecidea praeruptorum*

pusilla Tønsberg

recensa (Stirton) Hertel, V. Wirth & Vězda Syns.: *Lecidea recensa*

recensa var. **arcuatula** (Arnold) Fryday Syns. *Lecidea arcuatula*, *L. gyrodes* (Fryday 2008)

scrupulosa (Eckfeldt) Fryday (Fryday 2008) Syn.: *Biatora scrupulosa*, *Lecidea scrupulosa*, *L. kochiana* var. **subreagens**

texana Fryday (Fryday 2008)

thomsonii Brodo & V. Wirth (Brodo & Wirth 1998)

cyathoides (Ach.) V. Wirth & Vězda = misidentification for North America (Fryday 2008)

kochiana (Hepp) V. Wirth & Vězda = misidentification for North America (Fryday 2008)

lightfootii (Sm.) Coppins & P. James (Aptroot 1996) = misidentification for North America (Tønsberg 2002, Fryday 2008)

placidensis (H. Magn.) R. C. Harris = *Lecanora placidensis*

subfilamentosa (Zahlbr.) Brako = *Lecidea subfilamentosa* (Fryday 2008)

subreagens (H. Magn.) Oberholl. & V. Wirth = *Fuscidea scrupulosa* (Fryday 2008)

FUSCOPANNARIA P. M. Jørg.

ahlneri (P. M. Jørg.) P. M. Jørg. Syn.: *Pannaria ahlneri*

alaskana P. M. Jørg. & Tønsberg (Jørgensen 2000c)

aurita P. M. Jørg. (Jørgensen 2000c)

cheiroloba (Müll. Arg.) P. M. Jørg. (Jørgensen 2000c) Syn.: *Parmeliella cheiroloba*

confusa (P. M. Jørg.) P. M. Jørg. (Jørgensen 2000c)

convexa P. M. Jørg. (Jørgensen 2005)

coralloidea P. M. Jørg. (Jørgensen 2000c)

crustacea P. M. Jørg. (Jørgensen 2000c)

cyanolepra (Tuck.) P. M. Jørg. (Jørgensen 2000b) Syns.: *Pannaria cyanolepra*, *Parmeliella cyanolepra*
incisa (Müll. Arg.) P. M. Jørg. (Jørgensen 2000c)
laceratula (Hue) P. M. Jørg. Syn.: *Pannaria laceratula*
leprosa P. M. Jørg. & Tønsberg (Jørgensen 2000c)
leucosticta (Tuck.) P. M. Jørg. Syn.: *Pannaria leucosticta*
leucostictoides (Ohlsson) P. M. Jørg. Syn.: *Pannaria leucostictoides*
maritima (P. M. Jørg.) P. M. Jørg. Synonym: *Pannaria maritima*
mediterranea (Tav.) P. M. Jørg. Syn.: *Pannaria mediterranea*
pacifica P. M. Jørg. (Jørgensen 2000c)
praetermissa (Nyl.) P. M. Jørg. Syns.: *Pannaria praetermissa*, *Parmeliella praetermissa*, *P. lepidiota*
pulveracea (P. M. Jørg. & Henssen) P. M. Jørg. Syn.: *Pannaria pulveracea*
ramulina P. M. Jørg. & Tønsberg (Jørgensen 2000c)
sorediata P. M. Jørg. (Jørgensen 2000b)
thiersii P. M. Jørg. (Jørgensen 2000c)
viridescens P. M. Jørg. & Zhurb. (Jørgensen & Zhurbenko 2002)
californica (Tuck.) P. M. Jørg. (Jørgensen 2000c) = *Vahliella californica*
globigera Fryday & P. M. Jørg. (Fryday 2004a) = *Vahliella globigera*
hookerioides P. M. Jørg. (Jørgensen 2000c) = *Vahliella hookerioides*
labrata P. M. Jørg. (Jørgensen 2005) = *Vahliella labrata*
leucophaea (Vahl) P. M. Jørg. = *Vahliella leucophaea*
saubinetii (Mont.) P. M. Jørg. = *Vahliella saubinetii*

GABURA Adanson

fasciculare (L.) P. M. Jørg. (Jørgensen 2014) Syns.: *Collema fasciculare*, *Synechoblastus aggregatus*, *S. fascicularis*

GAMUNDIA Raithelh.

***leucophylla** (Gillet) H. E. Bigelow Syn.: *Fayodia leucophylla* (Bigelow 1983)
 ***striatula** (Kühner) Raitelh. Syn.: *Fayodia striatula* (Raitelhuber 1983)

GASPARRINIA Tornab. = **CALOPLACA**

GASSICURTIA Fée

catasema (Tuck.) Marbach Syn.: *Buellia catasema*, *B. caloosensis* (Marbach 2000)
coccinea Fée Syn.: *Buellia coccinea* (Marbach 2000)
subpulcella (Vainio) Marbach Syn.: *Buellia subpulcella*, *B. pachnidisca* (Marbach 2000)
verncoma (Tuck.) Marbach Syn.: *Buellia verncoma*, *Buelliosis vernicoma*, *Lecidea vernicoma* (Marbach 2000)
elizae (Tuck.) Marbach (Marbach 2000) = *Buellia elizae* (Lendemer et al. 2013)

GEISLERIA Nitschke (Aptroot et al. 2014)

sychnogonioides Nitschke Syn.: *Strigula sychnogonioides*

GELATINOPSIS Rambold & Triebel

#**geoglossi** (Ellis & Everh.) Rambold & Triebel (Diederich et al. 2010)
 ***acarosporicola** Kocourk. & K. Knudsen (Kocourková & Knudsen 2009a) = *Llimoniella acarosporicola*

GELTINGIA Alstrup & D. Hawksw.

***associata** (Th. Fr.) Alstrup & D. Hawksw. Syn.: *Lecidea associata*

GLAUCOMARIA M. Choisy

rupicola (L.) M. Choisy = *Lecanora rupicola*
sordida (Pers.) Th. Fr. = *Lecanora rupicola*

- GLAUCOTREMA** Rivas Plata & Lumbsch (Rivas Plata et al. 2012)
glaucophaenum (Kremp.) Rivas Plata & Lumbsch Syns.: Myriotrema glaucophaenum, Ocellularia glaucophaena Presence in N.A. is doubtful
- GLOBOSPHAERIA** D. Hawksw.
***jamesii** D. Hawksw. (Diederich 2003)
- GLOEOHEPPIA** Gyelnik
polyspora Henssen (Schultz 2002c)
squamulosa (Zahlbr.) M. Schultz Syn. : Psorotichia squamulosa (Schultz 2007b)
- GLYPHIS** Ach.
atrofusca (Müll. Arg.) Lücking (Lücking et al. 2011b)
cicatricosa Ach.
scyphulifera (Ach.) Staiger Syn.: Gyrostomum scyphuliferum (Staiger 2002, Lücking et al. 2011b)
substriatula (Nyl.) Staiger Syn.: Graphina substriatula (Staiger 2002, Tripp et al. 2010)
achariana Tuck. = G. cicatricosa
confluens Zenker = G. cicatricosa
favulosa Ach. = G. cicatricosa
- GLYPHOLECIA** Nyl.
scabra (Pers.) Müll. Arg. Syns.: Acarospora rhagadiosa, A. scabra, A. saxicola
- GOMPHILLUS** Nyl.
americanus Essl.
calycioides (Duby) Nyl. (Buck 1998)
- GONGYLIA** Körber
muscorum Zschacke (North American only) = Protothelenella pluriseptata (Fryday 2004b)
nadvornikii Servít = Segestria mammillosa, but a misidentification for North America (Fryday 2004b)
- GONOHYMENIA** J. Steiner = LICHINELLA
cribellifera (Nyl.) Henssen = Lichinella cribellifera
melamphylla (Tuck.) Henssen = Lichinella melamphylla
minnesotensis (Fink) Henssen = Lichinella minnesotensis
nigritella (Lettau) Henssen = Lichinella nigritella
- GOWARDIA** P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen (Halonen et al. 2009, Myllys et al. 2014)
arctica P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen Syn.: Alecatoria gowardii
nigricans (Ach.) P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen Syn.: Alecatoria nigricans
- GRANULOPYRENIS** Aptroot
hymnothora (Ach.) Aptroot Syns.: Verrucaria hymnothora, Microthelia hymnothora, Sphaeria bignoniae
- GRAPHINA** Müll. Arg. = GRAPHIS (Lücking et al. 2007; Tripp et al. 2010)
abaphoides (Nyl.) Müll. Arg. = Acanthothecis leucopepla
acharii (Fée) Müll. Arg. = Graphis acharii
acrophaea Müll. Arg. = Graphis parilis
adscribens (Nyl.) Müll. Arg. = Fissurina scolecitis for North American records
anguina (Mont.) Müll. Arg. = Thalloloma anguinum
antillarum (Vainio) Zahlbr. = Graphis antillarum
babingtonii (Mont.) Zahlbr. = Fissurina insculpta
colliculosa (Mont.) Hale = Platythecium colliculosum
columbina (Tuck.) M. Wirth & Hale = Fissurina columbina

cypressi Müll. Arg. = Fissurina cypressi
 dimidiata (Vainio) Zahlbr. = misidentification for North America
 dumastioides (Fink) ined. = Fissurina dumastioides
 floridana (Tuck.) R. C. Harris = Platythecium floridanum
 glaucoderma (Nyl.) Müll. Arg. = Fissurina incrustans
 incrustans (Fée) Müll. Arg. = Fissurina incrustans
 intertexta (Müll. Arg.) R. C. Harris = Acanthothecis aurantiaca
 leprocarpa (Nyl.) Zahlbr. = Chapsa leprocarpa
 marcescens (Fée) Müll. Arg. = Carbacanthographis marcescens
 mendax (Nyl.) Müll. Arg. = misidentification for North America
 nitidescens (Nyl.) Riddle = Fissurina nitidescens
 leuconephela (Nyl.) Zahlbr. = Fissurina leuconephela
 parilis (Kremp.) Müll. Arg. = Graphis parilis
 peplophora M. Wirth & Hale = Acanthothecis peplophora
 platycarpa (Eschw.) Zahlbr. = misidentification for North America
 platyleuca (Nyl.) Zahlbr. (Harris 1995a) = Diorygma pruinsum
 plittii Zahlbr. = Carbacanthographis marcescens
 scolecitis (Tuck.) Fink = Fissurina scolecitis
 sophisticascens (Nyl.) Zahlbr. = Graphis sophisticascens
 subnitida (Nyl.) Zahlbr. = Fissurina subnitida
 subnitidula (Nyl.) Zahlbr. = Fissurina subnitidula
 substriatula (Nyl.) Zahlbr. = Glyphis substriatula
 subvirginalis (Nyl.) Müll. Arg. = Acanthothecis mosquitensis
 virginalis (Nyl.) Müll. Arg. = Fissurina columbina
 virginea (Eschw.) Müll. Arg. = Diorygma poitaei
 xylophaga R. C. Harris = Graphis xylophaga

GRAPHIS Adanson

acharii Fée Syn. Graphina acharii Presence in N. Am. uncertain (Tripp et al. 2010)
analoga Nyl. (Seavey & Seavey 2011)
anfractuosa Eschw.
antillarum Vainio Syn.: Graphina antillarum
aperiens Müll. Arg.
appendiculata Common & Lücking (Lücking et al. 2011b)
argentata Lücking & Umaña (Lücking et al. 2011b)
assimilis Nyl. (Lücking et al. 2011b)
botryosa Tuck.
brittoniae F. Seavey & J. Seavey (Seavey & Seavey 2011)
caesiella Vainio
caesiocarpa Redinger (Lücking et al. 2011b)
caribica Lücking (Lücking et al. 2011b)
chlorotica A. Massal. (Seavey & Seavey 2011)
chromothecia R. C. Harris
cincta (Pers.) Aptroot (Seavey & Seavey 2011)
conferta Zenker (Lücking et al. 2011b)
crebra Vainio (Seavey & Seavey 2011)
cupei Vainio ex Lücking (Lücking et al. 2011b)
dendrogramma Nyl. (Seavey & Seavey 2011)
desquamescens (Fée) Zahlbr.
disserpens Nyl. (Lücking et al. 2011b)
elegans (Borrer ex Sm.) Ach.
elevata F. Seavey & J. Seavey (Seavey & Seavey 2011)
endoxantha Nyl. (Lücking 2009)
eulectra Tuck. Syn.: Phaeographis eulectra
filiformis Adaw. & Makhija (Seavey & Seavey 2011)
furcata Fée (Seavey & Seavey 2011)

glauescens Fée
haleana R. C. Harris
handelii Zahlbr. (Lücking et al. 2011b)
hinnulea F. Seavey & J. Seavey (Seavey & Seavey 2011)
hodgesiana Lendemer (Lendemer 2010b)
hyphosa Staiger (Lendemer 2010b)
intermedians Vainio (Lendemer 2010b)
intricata Fée
inversa R. C. Harris
leptocarpa Fée
leptoclada Müll. Arg
librata C. Knight
lineola Ach.
longula Kremp. (Lücking et al. 2011b)
lucifica R. C. Harris
lumbricina Vainio
modesta Zahlbr. (Seavey & Seavey 2011)
neolongata Lücking (Seavey & Seavey 2011)
oshioi M. Nakan. (Lücking et al. 2011b)
oxyclada Müll. Arg. (Lücking et al. 2011b)
paralleloides M. Cáceres & Lücking (Seavey et al. 2014)
parilis Kremp. Syn.: *Graphina parilis* (Lücking et al. 2008)
pavoniana Fée North American reports uncertain (Lendemer 2010b)
pergracilis (Zahlbr.) Lücking & A. W. Archer (Lücking & McCune 2012)
pinicola Zahlbr. (Lendemer 2010b)
platycarpella Müll. Arg.
proserpens Vainio (Tucker 1981)
pseudocinerea Lücking (Lücking et al. 2011b)
pyrrhocheiloides Zahlbr. (Seavey et al. 2014)
renschiana (Müll. Arg.) Stizenb. (Seavey & Seavey 2011)
rimulosa (Mont.) Trevisan
sauroidea Leighton (Lücking et al. 2011b)
saxorum Egea & Torrente (Egea & Torrente 1997)
schiffneri Zahlbr. (Seavey et al. 2014)
scripta (L.) Ach.
sophisticascens (Nyl.) Zahlbr. (Harris & Ladd 2005; Tripp et al. 2010)
stellata M. Cáceres & Lücking (Lücking et al. 2011b)
sterlingiana E. Tripp & Lendemer (Lendemer et al. 2013)
striatula (Ach.) Sprengel
subamylacea Zahlbr.
subflexibilis Lücking & Chaves (Lücking et al. 2011b)
supracola A. W. Archer (Seavey & Seavey 2011)
tamiamiensis Lendemer (Lendemer 2010b)
tenella Ach.
xanthospora Müll. Arg. (Lücking et al. 2011b)
xylophaga (R. C. Harris) Lendemer Syn.: *Graphina xylophaga* (Lendemer & Knudsen 2008b)
afzelii Ach. = *Dyplolabia afzelii*
amicta Nyl. (1935) = *Carbacanthographis amicta* (Nyl.) Staiger & Kalb (Staiger 2002) Probable misidentification for North America (Esslinger & Tucker 2009)
anguilliformis Taylor (Fink 1935) Identity uncertain; probable misidentification for North America (Esslinger & Tucker 2009)
atorubens Tuck. ex Fink = *Dimidiographa longissima*
balbisina Nyl. (Fink 1935) = *G. implicata* Fée Probable misidentification for North America (Esslinger & Tucker 2009)
beaumontii Tuck. = *Fissurina insidiosa*
candidata Nyl. = *Carbacanthographis candidata*

celtidis Müll. Arg. = *G. librata*
 cinerea Fée (Fink 1935) Probable misidentification for North America (Esslinger & Tucker 2009)
 dendritica (Ach.) Ach. (Mohr 1901) = *Phaeographis dendritica*
 diversa Nyl. (Fink 1935) = *Leiorreuma exaltata* (Zahlbruckner 1924, Staiger 2002)
 dumastii (Fée) Sprengel (Fink 1935) = *Fissurina dumastii* Fée Probable misidentification for North America (Esslinger & Tucker 2009)
 dumastioides Fink = *Fissurina dumastioides*
 floridana Tuck. = *Platythecium floridanum*
 grammatis Fée = *Platythecium grammitis*
 illiterata R. C. Harris = *Fissurina illiterata*
 incrustans = *Fissurina incrustans*
 insidiosa (C. Knight & Mitten) Hooker f. = *Fissurina insidiosa*
 intertexta Müll. Arg. = *Acanthothecis aurantiaca*
 inustula Stirton (Stirton 1875) = *Thalloloma anguinum*
 lactea (Fée) Sprengel (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)
 leucopepla Tuck. = *Acanthothecis leucopepla*
 marcescens = *Carbacanthographis marcescens*
 mosquitensis Tuck. = *Acanthothecis mosquitensis*
 nitida (Eschw.) Tuck. = *Medusulina nitida*
 nitidescens Nyl. = *Fissurina nitidescens*
 poitaeoides Nyl. = *Acanthothecis poitaeoides*
 radiata (Mont.) Nyl. (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)
 rigidula Müll. Arg. (Lendemer & Yahr 2004) = *G. leptoclada* (Lücking 2009)
 ramificans Nyl. (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)
 rufula Mont. = *Fissurina rufula*
 sculpturata Ach. (Mohr 1901) = *Phaeographis sculpturata*
 scolecitis Tuck. = *Fissurina scolecitis*
 scripta var. varia Ach. (Fink 1935) = *G. scripta*
 subdiversa Nyl. (Fink 1935) a nomen nudum; identity uncertain
 subelegans Nyl. = *G. endoxantha* (Lücking 2009)
 subnitidula Nyl. = *Fissurina subnitidula*
 subparilis Nyl. = *Fissurina rufula*
 turbulenta Nyl. = *Anomomorpha turbulenta*

GRAPHIUM Corda

***aphthosae** Alstrup & D. Hawksw. (Esslinger & Egan 1995)

GYALECTA Ach.

erythrozona Lettau
carneola (Ach.) Hellbom Syns. *Pachyphiale carneola* (Baloch et al. 2013a)
fagicola (Hepp ex Arnold) Kremp. Syns.: *Pachyphiale fagicola* (Baloch et al. 2013a)
flotowii Körber
foveolaris (Ach.) Schaerer
friesii Flotow ex Körber
geoica (Wahlenb. ex Ach.) Ach. Syn.: *Secoliga geoica*
gyalizella (Nyl.) Baloch & Lücking Syn.: *Pachyphiale gyalizella* (Baloch et al. 2013a)
herrei Vězda
jenensis (Batsch) Zahlbr.
kukriensis (Räsänen) Räsänen
obesipora R. C. Harris & Lendemer (Lendemer et al. 2013a)
peziza (Mont.) Anzi
russula (Körber ex Nyl.) Baloch, Lumbsch & Wedin Syns.: *Belonia fennica*, *B. russula* (Baloch et al. 2013a)
truncigena (Ach.) Hepp
 carneolutea (Turner) H. Olivier = *Cryptolechia carneolutea*
 cupularis (Hedwig) Schaerer = *G. jenensis*

farlowii Tuck. ex Nyl. = Petractis farlowii
lamprospora Nyl. = Bactrospora lamprospora
lutea (Dickson) Tuck. = Coenogonium luteum
odora Ach. (Fink 1935) = Ionaspis odora
radiatilis Tuck. = Skyttea radiatilis

GYALECTARIA Schmitt, Kalb & Lumbsch (Schmitt et al. 2010)

diluta (Björk, G. Thor & T. B. Wheeler) Schmitt, T. Sprib. & Lumbsch (Schmitt et al. 2010)

GYALECTIDIUM Müll. Arg.

appendiculatum Lücking, Lendemer & E. Tripp (Lücking et al. 2007, Lendemer & Tripp 2008)

catenulatum (Cavalc. & A. A. Silva) L. I. Ferraro, Lücking & Sérus. (Lücking et al. 2007)

filicinum Müll. Arg.

floridense Safranek & Lücking (Safranek & Lücking 2005)

imperfectum Vězda (Ferraro, Lücking & Sérusiaux 2001)

paolae Herrera-Campos & Lücking (Sanders & de los Ríos 2015)

tuckerae Lücking & Lendemer (Lücking et al. 2007)

ulloae Herrera-Campos & Lücking (Lücking et al. 2011b)

viride Lücking, W. R. Buck & Rivas Plata (Lücking et al. 2007)

yahriae W. R. Buck & Sérus. (Buck & Sérusiaux 2000)

rotuliforme Müll. Arg. = Asterothyrium rotuliforme

GYALECTINA Vězda = **CRYPTOLECHIA**

carneolutea (Turner) Vězda = Cryptolechia carneolutea

GYALIDEA Lettau ex Vězda

asteriscus (Anzi) Aptroot & Lücking (Aptroot & Lücking 2003) Syn.: Solorinella asteriscus

fritzei (Stein) Vězda (Hutten et al. 2013)

hyalinescens (Nyl.) Vězda

lecideopsis (A. Massal.) Lettau ex Vězda

lecideopsis var. **eucarpa** (Servít) Vězda

lecideopsis var. **kurdistanica** (J. Steiner) Vězda

roseola (Arnold) Lettau (Brodo 1995)

dodgei Vězda = G. hyalinescens

lecideopsis var. convarians (Nyl.) Vězda = G. lecideopsis var. eucarpa

GYALIDEOPSIS Vězda

africana Kalb & Vězda (Lücking et al. 2007)

americana Lücking & W. R. Buck (Lücking et al. 2007)

berenice (Ellis & Everh.) Lücking & W. R. Buck

buckii Lücking, Sérus. & Vězda (Lücking et al. 2007) Syn.: Tricharia vezdae

epicorticis (A. Funk) Tønsberg & Vězda (Lücking et al. 2007) Syn.: Microlychnus epicorticis

floridae Etayo & Diederich (Etayo & Diederich 2001)

helvetica van den Boom & Vězda (Spribille & Björk 2008)

lambinonii Vězda (Lücking et al. 2007)

macarthurii Lücking, Umaña & Aptroot (Lücking et al. 2007)

mexicana Tretiach, Giralt & Vězda (Lendemer 2011a)

moodyae Lendemer & Lücking (Lendemer & Lücking 2004)

ozarkensis Lücking, W. R. Buck & R. C. Harris (Lücking et al. 2007)

piceicola (Nyl.) Vězda

sessile W. B. Sanders & Lücking (Sanders & Lücking 2015)

subaequatoriana Lücking & W. R. Buck (Lücking et al. 2007)

submonospora Lücking & W. R. Buck (Lücking et al. 2007)

vainioi Kalb & Vězda var. **semicirculata** Lücking & W. R. Buck (Lücking et al. 2007)

vainioi Kalb & Vězda var. **vainioi**

wesselsii Lücking, Sipman & Chaves (Lücking et al. 2007)

alnicola W. Noble & Vězda = *G. piceicola*
anastomosans P. James & Vězda = *Jamesiella anastomosans*
athalloides (Nyl.) Vězda = *Diploschistella athalloides*
musciicola P. James & Vězda (Tønsberg 1997) = misidentification of *G. moodyae* (Lücking et al. 2007)

GYALOLECHIA A. Massal. (Arup et al. 2013)

bracteata (Hoffm.) A. Massal. subsp. **bracteata** Syn.: *Caloplaca bracteata*, *Fulgensia bracteata*
bracteata subsp. **bracteata** var. **alpina** (Th. Fr.) ined. Syn.: *Fulgensia bracteata* subsp. *bracteata* var. *alpina*
bracteata subsp. **deformis** (Poelt) ined. Syn.: *Fulgensia bracteata* subsp. *deformis*
desertorum (Tomin) Söchting, Frödén & Arup Syn.: *Fulgensia desertorum*
epiphyta (Lynge) Vondrák Syns.: *Caloplaca arizonica*, *C. epiphyta* (Vondrák et al. 2016)
flavorubescens (Hudson) Söchting, Frödén & Arup Syn.: *Caloplaca aurantiaca*, *C. flavorubescens*
flavovirescens (Wulfen) Söchting, Frödén & Arup Syn.: *Caloplaca erythrella*, *C. flavovirescens*
fulgens (Sw.) Söchting, Frödén & Arup Syn.: *Caloplaca fulgens*, *Fulgensia fulgens*, *Placodium fulgens*
persimilis (Wetmore) Söchting, Frödén & Arup Syn.: *Caloplaca persimilis*
stantonii (W. A. Weber ex Arup) Söchting, Frödén & Arup Syn.: *Caloplaca stantonii*
stipitata (Wetmore) Söchting, Frödén & Arup Syn.: *Caloplaca stipitata*
subbracteata (Nyl.) Söchting, Frödén & Arup Syn.: *Fulgensia subbracteata*
xanthostigmoidea (Räsänen) Söchting, Frödén & Arup Syns.: *C. discolor*, *C. xanthostigmoidea*
arizonica (H. Magn.) Söchting, Frödén & Arup = *G. epiphyta* (Vondrák et al. 2016)

GYMNODERMA Nyl.

lineare (A. Evans) Yoshim. & Sharp = *Cetradonia linearis*

GYPSOPLACA Timdal

macrophylla (Zahlbr.) Timdal

GYROGRAPHA Ertz & Tehler (Ertz et al. 2015b)

gyrocarpa (Flotow) Ertz & Tehler Syn.: *Opegrapha gyrocarpa* (Ertz et al. 2015b)

GYROPHORA Ach. = **UMBILICARIA**

angulata (Tuck.) Herre = *Umbilicaria angulata*
anthracina (Wulfen) Körber = *Umbilicaria rigida*
arctica Ach. = *Umbilicaria arctica*
cylindrica (L.) Ach. = *Umbilicaria cylindrica*
decussata (Vill.) Zahlbr. = *Umbilicaria decussata*
deusta (L.) Ach. = *Umbilicaria deusta*
dillenii (Tuck.) Müll. Arg. = *Umbilicaria mammulata*
erosa (G. Weber) Ach. = *Umbilicaria torrefacta*
flocculosa (Wulfen) Turner & Borrer = *Umbilicaria deusta*
grisea Swartz (Fink 1935) = *Umbilicaria grisea* Hoffm. = misidentification for North America (Esslinger & Tucker 2009)
hyperborea Ach. = *Umbilicaria hyperborea* var. *hyperborea*
muhlenbergii Ach. = *Umbilicaria muhlenbergii*
phaea (Tuck.) Nyl. = *Umbilicaria phaea*
polyphylla (L.) Funck = *Umbilicaria polyphylla*
polyrrhiza (L.) Körber = *Umbilicaria polyrrhiza*
proboscidea (L.) Ach. (Fink 1935) = *Umbilicaria proboscidea*
rugifera (Nyl.) Th. Fr. (Fink 1935) = *Umbilicaria virginis* (Llano 1950)
torrefacta (Lightf.) Cromb. (Fink 1935) = *Umbilicaria torrefacta*
vellea (L.) Ach. = *Umbilicaria vellea*

GYROSTOMUM Fr.

curtisii Tuck. (Fink 1935) = *Baculifera curtisii*
scyphuliferum (Ach.) Nyl. = *Glyphis scyphuliferum*

HAEMATOMMA A. Massal.

accolens (Stirton) Hillm. (Staiger & Kalb 1995)
americanum Kalb & Staiger (Staiger & Kalb 1995)
fenzlianum A. Massal. (Staiger & Kalb 1995)
flexuosum Hillm. (Staiger & Kalb 1995)
guyanense Kalb & Staiger (Brodo et al. 2008)
leprarioides (Vainio) Vainio (Brodo et al. 2008)
ochroleucum (Necker) J. R. Laundon var. **ochroleucum**
ochroleucum (Necker) J. R. Laundon var. **porphyrium** (Pers.) J. R. Laundon Syn.: *H. porphyrium*
persoonii (Fée) A. Massal. (Staiger & Kalb 1995)
rufidulum (Fée) A. Massal. (Staiger & Kalb 1995)
caesium Coppins & P. James = *Mycoblastus caesius*
californicum Sigal & D. Toren = *Ophioparma rubricosa* (Ekman 1996)
cismonicum Beltr. = *Loxospora cismonica*
coccineum (Dickson) Körber = misidentification for North America
elatinum (Ach.) A. Massal. = *Loxospora elatina*
lapponicum Räsänen = *Ophioparma lapponica*
ochrophaeum (Tuck.) A. Massal. = *Loxospora ochrophaea*
pacificum Hasse = *Ophioparma rubricosa* (Staiger & Kalb 1995, Ekman 1996)
porphyrium (Pers.) Zopf = *H. ochroleucum* var. *porphyrium*
puniceum (Sw.) A. Massal. North American records are *H. persoonii*
pustulatum Brodo & W. L. Culb. = *Variolaria pustulata*
rappii Zahlbr. = *Schismatomma rappii*
subpuniceum (Fée) B. de Lesd. = *H. fenzlianum*
ventosum (L.) A. Massal. = *Ophioparma ventosa*

HAFELLIA Kalb, H. Mayrhofer & Scheid. = *Buellia* (Nordin & Tibell 2005)

arnoldii (Servit) Hafellner & Türk = *Buellia arnoldii*
bahiana (Malme) Sheard = *Buellia bahiana*
bahiana var. **pleiotropa** (Malme) Sheard = *Buellia bahiana* var. **pleiotropa**
callispora (C. Knight) H. Mayrhofer & Sheard = *Buellia callispora*
curatellae (Malme) Marbach (Marbach 2000) = *Buellia curatellae*
disciformis (Fr.) Marbach & H. Mayrhofer = *Buellia disciformis*
fosteri Imshaug & Sheard = a species of *Buellia*
parastata (Nyl.) Kalb = *Buellia parastata*
pleiotera (Malme) Marbach (Hansen et al. 2008) = *Buellia pleiotera*

HAFELLNERA Houmeau & Cl. Roux

parasemella (Nyl.) Houmeau & Cl. Roux = *Schaereria parasemella*

HALECANIA M. Mayrhofer

alpivaga (Th. Fr.) M. Mayrhofer Syns.: *Lecania alpivaga*, *L. disceptans*, *L. thallophila*, *Lecanora disceptans*
australis Lumbsch (van den Boom & Ryan 2004a)
pepegospora (H. Magn.) van den Boom (van den Boom & Elix 2005) Syn.: *Lecania pepegospora*
viridescens Coppins & P. James

HALEGRAPHA Rivas Plata & Lücking (Lücking et al. 2011a, 2011b)

floridana Common & Lücking

HALOSPORA (Zschacke) Tomas. & Cif.

***discrepans** (J. Lahm ex Arnold) Hafellner (Dillman et al. 2012)

HARPIDIUM Körber

nashii Scheid. (Schultz et al. 2000)
glaucophanum (Hasse) Hasse = Rhizoplaca glaucophana

HASSEA Zahlbr.

***bacillosa** (Nyl.) Zahlbr. = Sarcopyrenia bacillosa

HAZSLINSZKYA Körber (Ertz & Diederich 2015)

gibberulosa (Ach.) Körber Misidentifications for North America (Perlmutter et al. 2015)

HAWKSWORTHIANA U. Braun

***peltigericola** (D. Hawks.) U. Braun

HEIOMASIA Nelsen, Lücking & Rivas Plata (Nelsen & Lücking 2010 [2011])

seaveyorum Nelsen & Lücking

HELMINTHOCARPON Fée

leprevostii Fée

HELOCARPON Th. Fr.

crassipes Th. Fr. Syns.: Lecidea crassipes, Micarea crassipes
lesdainii (Zahlbr.) Breuss (Breuss 2001)
corticola Breuss (Etayo 1998) = H. lesdainii

HENRICA B. de Lesd.

americana Breuss (Breuss 2002c)
melaspora (Taylor) Savić & Tibell Syn.: Polyblastia melaspora (Savić & Tibell 2008)

HEPPIA Nägeli

adglutinata (Kremp.) A. Massal.
conchiloba Zahlbr.
despreauxii (Mont.) Tuck. (Büdel et al. 2002) Syns.: Anema dodgei, Solorinaria despreauxii (Schultz 2007b)
lutosa (Ach.) Nyl.
alumenensis Herre Excluded from North American flora; type not found.
bolanderi (Tuck.) Vainio = Peltula bolanderi
deserticola Zahlbr. = Peltula obscurans var. deserticola
euploca (Ach.) Vainio = Peltula euploca
guepinii (Delise) Nyl. = Peltula euploca
hassei Zahlbr. = Peltula obscurans var. hassei
leptopholis Nyl. ex Hasse = Peltula patellata
macrospora B. de Lesd. = H. conchiloba
placodizans Zahlbr. = Peltula placodizans.
planescens Nyl. Excluded from North American flora; type not found.
polyphylla B. de Lesd. = Peltula euploca
polyspora Tuck. = Peltula patellata
psammophila Nyl. = misidentification for North America
richardsii Herre = Peltula richardsii
terrena Nyl. ex Hasse = Peltula patellata
tortuosa (Nees) Vainio = Peltula tortuosa
virescens (Despr.) Nyl. = H. lutosa
zahlbruckneri Hasse = Peltula zahlbruckneri

HERPOTHALLON Tobler (Aptroot et al. 2009)

echinatum Aptroot, Lücking & Will-Wolf (Lücking et al. 2011b)
hyposticticum F. Seavey & J. Seavey (Seavey & Seavey 2014a)

rubrocinctum (Ehrenb.: Fr.) Aptroot, Lücking & G. Thor Syns. *Cryptothecia rubrocincta*, *C. sanguineum*
rubroechinatum Frisch & G. Thor (Frisch et al. 2010)
antillarum (Vainio) Aptroot, Lücking & G. Thor (Lücking et al. 2011b) = *Diorygma antillarum*

HERTELIANA P. James

alaskensis (Nyl.) S. Ekman Syns.: *Bacidia alaskensis*, *Lecidea alaskensis* (Ekman 1996)

HERTELIDEA Printzen & Kantvilas (Printzen & Kantvilas 2004)

botryosa (Fr.) Printzen & Kantvilas Syns.: *Biatora botryosa*, *Lecidea botryosa* (Printzen & Kantvilas 2004)

pseudobotryosa R. C. Harris, Ladd & Printzen (Printzen & Kantvilas 2004)

HETEROCARPON Müll. Arg.

***ochroleucum** (Tuck.) Müll. Arg. Syn.: *Endocarpon ochroleucum*

HETEROCYPHELIUM Vainio

leucampyx (Tuck.) Vainio

HETERODERMIA Trevisan

albicans (Pers.) Swinscow & Krog Syns.: *Anaptychia domingensis*, *A. ravenelii*

appalachensis (Kurok.) W. L. Culb. Syn.: *Anaptychia appalachensis*

boryi (Fée) K. P. Singh & S. R. Singh Syns.: *Anaptychia boryi*, *A. neoleucomelaena*

casarettiana (A. Massal.) Trevisan Syn.: *Anaptychia casarettiana*

chondroidea W. A. Weber & D. D. Awasthi Syn.: *Anaptychia chondroidea*

comosa (Eschw.) Follm. & Redón (Harris 1995b) Syn.: *Physcia comosa*

crocea R. C. Harris North American reports of *H. corallophora* belong here

dendritica (Pers.) Poelt Syn.: *Anaptychia dendritica*

diademata (Taylor) D. D. Awasthi Syn.: *Anaptychia diademata*

echinata (Taylor) W. L. Culb. Syn.: *Anaptychia echinata*

erecta Lendemer (Lendemer 2009a)

erinacea (Ach.) W. A. Weber Syn.: *Anaptychia erinacea*

galactophylla (Tuck.) W. L. Culb. Syns.: *Anaptychia comosa* (for North American records), *A. galactophylla*

granulifera (Ach.) W. L. Culb. Syn.: *Anaptychia granulifera*

hypoleuca (Muhl.) Trevisan Syn.: *Anaptychia hypoleuca*

japonica (M. Satô) Swinscow & Krog

leucomela (L.) Poelt Syn.: *Anaptychia "leucomelaena"*

microphylla (Kurok.) Skorepa Questionable for N. America (Lendemer 2009a)

namaquana Brusse (Esslinger & Bratt 1998)

neglecta Lendemer, R. C. Harris & E. Tripp (Lendemer et al. 2007)

obscurata (Nyl.) Trevisan Syns.: *Anaptychia heterochroa*, *A. hypoleuca* var. *colorata*, *A. obscurata*, *A. sorediifera*

palpebrata (Taylor) Vainio (Moberg 2011)

podocarpa (Bél.) Awasthi (Moberg & Nash 1999)

pseudospeciosa (Kurok.) W. L. Culb. Syn.: *Anaptychia pseudospeciosa*

rugulosa (Kurok.) Wetmore

sitchensis Goward & W. Noble

speciosa (Wulfen) Trevisan Syns.: *Anaptychia pseudospeciosa* var. *tremulans*, *A. speciosa*

squamulosa (Degel.) W. L. Culb. Syn.: *Anaptychia squamulosa*

tropica (Kurok.) Sipman Syn.: *Anaptychia tropica* (Marcano et al. 1996)

barbifera (Nyl.) K. P. Singh = misidentification for N.A. (Lendemer 2009a)

corallophora (Taylor) Skorepa = *H. crocea* for North American reports

domingensis (Ach.) Trevisan = *H. albicans*

leucomelaena (L.) Poelt = *H. leucomela*

neoleucomelaena (Kurok.) Follmann & Redón = *H. boryi*

propagulifera (Vainio) J. P. Dey = misidentification for North America, mostly *H. neglecta* (Lendemer et al. 2007)
tremulans (Müll. Arg.) W. L. Culb. = *H. speciosa*

HETEROPLACIDIUM Breuss (Breuss 1996)

#**compactum** (A. Massal.) Gueidan & Cl. Roux (Prieto et al. 2012) Syn.: *Catapyrenium compactum*, *Dermatocarpon compactum*, *Verrucaria compacta*
congestum (Breuss & McCune) Breuss Syn.: *Catapyrenium congestum*
#**transmutans** K. Knudsen, Breuss & Kocourk. (Knudsen et al. 2014a)
zamenhofianum (Clauzade & Cl. Roux) Cl. Roux (Kocourková et al. 2012) Syn.: *Verrucaria zamenhofiana*
acarosporoides (Zahlbr.) Breuss = *Placidium acarosporoides*
podolepis (Breuss) Breuss = *Placidium podolepis*

HETEROTHECIUM Flotow

consersum (Fée) Flotow = *Piccolia consersa*
domingense (Pers.) Flotow = *Letrouitia domingense*
leucoxanthum (Sprengel) A. Massal. = *Brigantiaea leucoxantha*
nannarium Tuck. = *Piccolia nannaria*
pachycheilum Tuck. = *Megalospora pachycheila*
tuberculosum (Fée) Flotow = *Megalospora tuberculosa*

HOBSONIA Massee

**christiansenii* B. L. Brady & D. Hawksw. = *Illosporopsis christiansenii*

HOBSONIOPSIS D. Hawksw. (Sikaroodi et al. 2001)

***santessonii** (Lowen & D. Hawksw.) D. Hawksw. (Diederich 2003)

HOMOSTEGIA Fuckel

***dermatocarpi** Alstrup & M. S. Cole (Alstrup & Cole 1998)
***hertelii** D. Hawksw., V. Atienza & M. Cole (Hawksworth et al. 2004)
***piggotii** (Berk. & Broome) P. Karsten (Esslinger & Egan 1995)
**parmeliana* (Jacq.) Vouaux (Cole & Hawksworth 2001) Erroneous report based on *H. hertelii* (Hawksworth et al. 2004)

HUBBSIA W. A. Weber (Tehler et al. 1997)

californica (Räsänen) W. A. Weber Syn.: *Reinkella californica*
lumbricoides W. A. Weber = *Schizopelte lumbricoides* (Ertz & Tehler 2011), but not known north of Mexico
parishii (Hasse) Tehler, Loht., Myllys & Sundin = *Schizopelte parishii* (Ertz & Tehler 2011)

HUILIA Zahlbr. = **PORPIDIA**

albocaerulescens (Wulfen) Hertel = *Porpidia albocaerulescens*
cinereoatra (Ach.) Hertel = *Porpidia cinereoatra*
crustulata (Ach.) Hertel = *Porpidia crustulata*
elegantior (H. Magn.) Hertel = *Amygdalaria elegantior*
flavocaerulescens (Hornem.) Hertel = *Porpidia flavicunda*
glaucophaea (Körber) Hertel = *Porpidia rugosa*
macrocarpa (DC.) Hertel = *Porpidia macrocarpa*
melinodes (Körber) Hertel = *Porpidia melinodes*
nigrocruenta (Anzi) Hertel = *Porpidia macrocarpa*
panaeola (Ach.) Hertel = *Amygdalaria panaeola*
platycarpoides (Bagl.) Hertel = *Porpidia platycarpoides*
soredizodes (Lamy ex Nyl.) Hertel = *Porpidia soredizodes*
superba (Körber) Hertel = *Porpidia superba*
tuberculosa (Sm.) P. James = *Porpidia tuberculosa*

HYALOPEZIZA Fuckel

***rapax** Huhtinen (Huhtinen et al. 2008)

HYDROPUNCTARIA Keller, Gueidan & Thüs (Gueidan et al. 2009)

maura (Wahlenb.) Keller, Gueidan & Thüs Syn.: *Verrucaria maura*

rheitrophila (Zschacke) Keller, Gueidan & Thüs Syn.: *Verrucaria kernstockii*, *V. rheitrophila*

scabra (Vězda) Keller, Gueidan & Thüs (McCune et al. 2014b)

HYDROTHYRIA J. L. Russell = **PELTIGERA**

venosa J. L. Russell = *Peltigera hydrothyria*

HYMENELIA Kremp.

arctica (Lynge) Lutzoni Syn.: *Ionaspis arctica*, *I. epulotica* var. *arctica*

ceracea (Arnold) M. Choisy

cyanocarpa (Anzi) Lutzoni (Miller et al. 2005)

epulotica (Ach.) Lutzoni Syn.: *Ionaspis epulotica*, *Lecanora epulotica*

heteromorpha (Kremp.) Lutzoni Syn.: *Ionaspis heteromorpha*, *I. annularis*, *I. ochracella*, *I. reducta*, *I. schismatopsis*

melanocarpa (Kremp.) Arnold Syn.: *Ionaspis melanocarpa*

rhodopsis (Sommerf.) Lutzoni Syn.: *Ionaspis ochromicra*, *I. rhodopsis*

lacustris (With.) M. Choisy = *Ionaspis lacustris*

ochrolemma (Vainio) Gowan & Ahti = *Porpidia ochrolemma*

prevostii (Duby) Kremp. = *H. epulotica*

HYPERPHYSCIA Müll. Arg.

adglutinata (Flörke) H. Mayrhofer & Poelt Syn.: *Physcia adglutinata*, *P. elaeina*, *Physciopsis adglutinata*, *P. elaeina*

confusa Essl., C. A. Morse & S. Leavitt (Esslinger et al. 2012)

minor (Fée) D. D. Awasthi Syn.: *Physcia minor*, *Physciopsis minor*

pyrithrocardia (Müll. Arg.) Moberg & Aptroot (Esslinger et al. 2012)

syncolla (Tuck. ex Nyl.) Kalb Syn.: *Physcia syncolla*, *Physciopsis syncolla*

HYPOCENOMYCE M. Choisy

scalaris (Ach. ex Lilj.) M. Choisy Syn.: *Lecidea scalaris*, *L. ostreata*, *Psora scalaris*, *P. ostreata*, *anthracophila* (Nyl.) P. James & Gotth. Schneider (Timdal 2002a) = *Carbonicola anthracophila*

castaneocinerea (Räsänen) Timdal = *Carbonicola myrmecina*

friesii (Ach.) P. James & Gotth. Schneider = *Xylopsora friesii*

leucococca R. Sant. = *Toensbergia leucococca*

oligospora Timdal (Timdal 2001) = *Fulgidea oligospora*

praestabilis (Nyl.) Timdal = *Pycnora praestabilis*

sierrae Timdal (Timdal 2001) = *Fulgidea sierrae*

sorophora (Vainio) P. James & Poelt = *Pycnora sorophora*

xanthococca (Sommerf.) P. James & Gotth. Schneider = *Pycnora xanthococca*

HYPOGYMNIA (Nyl.) Nyl.

apinnata Goward & McCune

austerodes (Nyl.) Räsänen Syn.: *Parmelia austerodes*

beringiana (Krog) McCune (McCune 2008)

bitteri (Lynge) Ahti Syn.: *Parmelia bitteri*

canadensis Goward & McCune (Goward & McCune 2007)

castanea McCune & Krog (McCune 2008)

dichroma Goward (Goward et al. 2012)

duplicata (Ach.) Rass. Syn.: *Parmelia elongata* (Spribille et al. 2010)

enteromorpha (Ach.) Nyl.

farinacea Zopf Uncertain for North America (Goward et al. 2012)

fistulosa McCune & Krog (McCune 2008)
gracilis McCune (McCune 2002)
heterophylla L. Pike
hultenii (Degel.) Krog Syn.: Cavernularia hultenii (Miadlikowska et al. 2011)
imshaugii Krog
inactiva (Krog) Ohlsson
incurvoides Rass. (McCune et al. 2006)
krogiae Ohlsson
lophyrea (Ach.) Krog Syn.: Cavernularia lophyrea, Parmelia lophyrea (Miadlikowska et al. 2011)
lugubris (Pers.) Krog
minilobata McCune & Schoch (McCune & Schoch 2009)
mollis L. Pike & Hale
occidentalis L. Pike
oceanica Goward
physodes (L.) Nyl. Syn.: Parmelia duplicata var. douglasicola, P. physodes, P. oregana
protea Goward, T. Sprib. & Ahti (Goward et al. 2012)
pulverata (Nyl. ex Crombie) Elix
recurva Goward, Björk, & Hollinger (Goward et al. 2010)
rugosa (G. Merr.) L. Pike
salsa Goward (Goward et al. 2012)
schizidiata McCune (McCune 2002)
subcapitata (Nyl.) Rass.
subobscura (Vainio) Poelt Syn.: Parmelia subobscura
subphysodes (Kremp.) Filson (McCune & Rosentreter 1997)
tubulosa (Schaerer) Hav. Syn.: Parmelia tubulosa
verruculosa Goward (Goward et al. 2012)
vittata (Ach.) Parrique Syn.: Parmelia vittata
wilfiana Goward, T. Sprib. & Ahti (Goward et al. 2010)
 amplexa Goward, Björk & T. B. Wheeler (Lumbsch et al. 2011) = H. imshaugii (McCune et al. 2011)
 atrofusca (Schaerer) Räsänen = Brodoa atrofusca, but North American reports are misidentifications
 bitteriana (Zahlbr.) Räsänen = H. farinacea
 elongata (Hillm.) Rass. = H. duplicata
 encausta (Sm.) Walter Watson = Brodoa intestiniformis (but see below)
 intestiniformis (Vill.) Räsänen = Brodoa intestiniformis, but North American records are misidentifications of, e.g., Brodoa oroarctica
 metaphysodes (Asahina) Rass. = misidentification for North America (Goward et al. 2010)
 oroarctica Krog = Brodoa oroarctica
 pseudophysodes (Asahina) Rass. North American reports are H. oceanica

HYPOTRACHYNA (Vainio) Hale

afrorevoluta (Krog & Swinscow) Krog & Swinscow (Knudsen & Lendemer 2005b)
catawbiensis (Degel.) Divakar, A. Crespo, Sipman, Elix & Lumbsch Syn.: Cetrariastrum catawbiense, Everniastrum catawbiense, Parmelia sorocheila var. catawbiensis
costaricensis (Nyl.) Hale
croceopustulata (Kurok.) Hale Syn.: Parmelia croceopustulata
cryptochlora (Vainio) D. Hawksw. & A. Crespo Syn.: Parmelinopsis cryptochlora (Divakar et al. 2013)
dactylifera (Vainio) Hale (Nash et al. 1998)
densirhizinata (Kurok.) Hale Syn.: Parmelia densirhizinata
dentella (Hale & Kurok.) Hale Syn.: Parmelia dentella
ensifolia (Kurok.) Hale Syn.: Parmelia ensifolia, P. lobulifera var. insensitiva
gondylophora (Hale) Hale Syn.: Parmelia gondylophora
horrescens (Taylor) Krog & Swinscow Syn.: Parmelia horrescens, Parmelina horrescens, Parmelinopsis horrescens (Divakar 2013)
imbricatula (Zahlbr.) Hale Syn.: Parmelia imbricatula, P. lobulifera, P. lobulifera var. luteoreagens
laevigata (Sm.) Hale Syn.: Parmelia laevigata

livida (Taylor) Hale Syn.: *Parmelia livida*
lividescens (Kurok.) Hale (Hodkinson 2010)
meridensis Hale & López (Nash, et al. 2002)
minarum (Vainio) Krog & Swinscow Syns.: *Parmelia dissecta*, *P. hubrichtii*, *Parmelina dissecta*, *P. minarum*, *Parmelinopsis minarum* (Divakar 2013)
oostingii (J. P. Dey) Hale Syn.: *Parmelia oostingii*
osseoalba (Vainio) Park & Hale Syns.: *Parmelia formosana*
polydactyla (Krog & Swinscow) T. H. Nash
producta Hale Syn.: *Parmelia producta*
prolongata (Kurok.) Hale Syns.: *Parmelia prolongata*, *P. lobulifera* var. *sanguineoreagens*, *P. rachista*
pseudosinuosa (Asahina) Hale
pulvinata (Fée) Hale Syn.: *Parmelia pulvinata*
punoensis Kurok. & K. H. Moon (Nash et al. 2002)
pustulifera (Hale) Skorepa Syn.: *Parmelia pustulifera*
revoluta (Flörke) Hale Syn.: *Parmelia revoluta*
riparia McCune (McCune 1998a)
rockii (Zahlbr.) Hale Syn.: *Parmelia rockii*
showmanii Hale
sinuosa (Sm.) Hale Syn.: *Parmelia sinuosa*
spumosa (Asahina) Krog & Swinscow Syns.: *Parmelia spumosa*, *Parmelina spumosa*, *Parmelinopsis spumosa* (Divakar et al. 2013)
subsaxatilis (B. de Lesd.) Hale
swinscowii (Hale) Krog & Swinscow Syns.: *Parmelia swinscowii*, *Parmelina swinscowii*, *Parmelinopsis swinscowii* (Divakar et al. 2013)
taylorensis (M. E. Mitch.) Hale (Gröner & Dietrich 1996)
thysanota (Kurok.) Hale Syn.: *Parmelia thysanota*
virginica (Hale) Hale Syn.: *Parmelia virginica*
formosana (Zahlbr.) Hale = *H. osseoalba*
rachista (Hale) Hale = *H. prolongata*
sorocheila (Vainio) Divakar, A. Crespo, Sipman, Elix & Lumbsch Reports apparently based on *H. catawbiensis* (Egan 1987)

ICMADOPHILA Trevisan

ericetorum (L.) Zahlbr. Syn.: *Baeomyces aeruginosa*

ILLOSPORIOPSIS D. Hawksw.

***christiansenii** (B. L. Brady & D. Hawksw.) D. Hawks. (Sikaroodi et al. 2001)

ILLOSPORIUM Martius

***carneum** Fr.

***corallinum** Roberge = *Marchandiomyces corallinus*

IMMERSARIA Rambold & Pietschm.

athroocarpa (Ach.) Rambold & Pietschm.

carbonoidea (J. W. Thomson) Esnault & Cl. Roux Syn.: *Lecidea carbonoidea*

IMSHAUGIA S. F. Meyer

aleurites (Ach.) S. F. Meyer Syn.: *Parmeliopsis aleurites*

placorodia (Ach.) S. F. Meyer Syn.: *Parmeliopsis placorodia*

INGVARIELLA Guderley & Lumbsch

bispora (Bagl.) Guderley & Lumbsch (Lumbsch 2004)

INODERMA (Ach.) Gray

byssaceum (Weigel) Gray Syn.: *Arthonia byssacea* (Frisch et al. 2015)

INTRALICHEN D. Hawksw. & M. S. Cole

***baccisporus** Hawksworth & M. S. Cole (Hawksworth & Cole 2002)

***christiansenii** (D. Hawksw.) D. Hawksw. & M. S. Cole Syn.: *Bispora christiansenii* (Hawksworth & Cole 2002)

***lichenicola** (M. S. Christ. & D. Hawksw.) D. Hawksw. & M. S. Cole (Kocourková et al. 2012)

***lichenum** (Diederich) D. Hawksw. & M. S. Cole (Hawksworth & Cole 2002) Syn.: *Bispora lichenum*

INVOLUCROPYRENIUM Breuss (Breuss 1996)

waltheri (Kremp.) Breuss Syn.: *Catapyrenium waltheri*, *Dermatocarpon waltheri*

IONASPIS Th. Fr.

alba Lutzoni

lacustris (With.) Lutzoni Syns.: *Hymenelia lacustris*, *Aspicilia lacustris*, *Lecanora lacustris*, *L. deplanans*

lavata H. Magn. Syn.: *Lecanora lavata*

obtecta (Vainio) R. Sant. (McCune et al. 2014b)

odora (Ach.) Th. Fr. ex Stein Syns.: *Gyalecta odora*, *Lecanora odora*

suaveolens (Fr.) Th. Fr. ex Stein

annularis H. Magn. (Thomson 1997) = *Hymenelia heteromorpha*

arctica Lynge = *Hymenelia arctica*

chrysophana (Körber) Stein = *I. suaveolens*

epulotica (Ach.) Blomb. & Forssell = *Hymenelia epulotica*

epulotica var. *arctica* (Lynge) H. Magn. = *Hymenelia arctica*

heteromorpha (Kremp.) Arnold = *Hymenelia heteromorpha*

melanocarpa (Kremp.) Arnold = *Hymenelia melanocarpa*

ochracella (Nyl.) H. Magn. = *Hymenelia heteromorpha*

ochromicra (Nyl.) Hue = *Hymenelia rhodopis*

reducta H. Magn. = *Hymenelia heteromorpha*

rhodopis (Sommerf.) Blomb. & Forssell = *Hymenelia rhodopis*

schismatopis (Nyl.) Hue = *Hymenelia heteromorpha*

spitsbergensis H. Magn. = nom. invalidum

JAMESIELLA Lücking, Sérus. & Vězda

anastomosans (P. James & Vězda) Lücking, Sérus. & Vězda (Lücking et al. 2007) Syn.: *Gyalideopsis anastomosans*

JAPEWIA Tønsberg

subaurifera Muhr & Tønsberg

tornoënsis (Nyl.) Tønsberg Syns.: *Lecidea tornoënsis*, *Mycoblastus tornoënsis*

carrollii (Coppins & P. James) Tønsberg (Aptroot 1996) = misidentification for *North America* (Printzen 1999)

JAPEWIELLA Printzen

dollypartoniana J. L. Allen & Lendemer (Allen & Lendemer 2015)

JARXIA D. Hawksw. (Harris 1995a)

ilicicola R. C. Harris (Harris 1995a)

thelenula R. C. Harris (Harris 1995a)

JULELLA Fabre

⁺**asema** R. C. Harris (Harris 1995a)

⁺**dispora** (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis dispora*

⁺**fallaciosa** (Arnold) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis fallaciosa*

⁺**geminella** (Nyl.) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis rappii*

⁺**lactea** (A. Massal.) M. E. Barr (Harris 1995a) Syn.: *Polyblastiopsis lactea*

⁺**sericea** (A. Massal.) Coppins (Aptroot 2002b)

- +**sublactea** (Nyl.) R. C. Harris (Harris 1995a) Syn.: *Clathroporina exiguella*, *C. amygdalina*, *Polyblastiopsis sublactaea*
- +**taxodii** R. C. Harris (Harris 1995a)
- +**variiformis** R. C. Harris (Harris 1995a)
- +**vitrispora** (Cooke & Harkness) M. E. Barr (Harris 1995a)

KAERNEFELTIA A. Thell & Goward (Thell & Goward 1996)

- californica** (Tuck.) A. Thell & Goward (Thell & Goward 1996) Syns.: *Alectoria californica*, *A. cetrariza*, *Cetraria californica*, *Cornicularia californica*, *Tuckermannopsis californica*
- merrillii** (Du Rietz) A. Thell & Goward (Thell & Goward 1996) Syns.: *Cetraria merrillii*, *Tuckermannopsis merrillii*

KALCHBRENNERIELLA Diederich & M. S. Christ.

- ***cyanescens** (Kalchbr.) Diederich & M. S. Christ. (Diederich 2002)

KARSCHIA Körber

- ***talcophila** (Ach.) Körber (Hafellner et al. 2002)
- ***athallina** (Müll. Arg.) Vouaux = *Dactylospora athallina*
- ***inops** Triebel & Rambold = *Buelliella inops*

KARSTENIOMYCES D. Hawksw.

- ***peltigerae** (P. Karsten) D. Hawksw. (Alstrup & Cole 1998)

KEPHARTIA R. C. Harris & Lendemer (Lendemer et al. 2013)

- crystalligera** R. C. Harris & Lendemer
- spinadiaboli** R. C. Harris & Lendemer

KILIASIA Hafellner = **TONINIA**

- athallina** (Hepp) Hafellner = *Toninia athallina*
- philippea** (Mont.) Hafellner = *Toninia philippea*
- tristis** (Müll. Arg.) Hafellner = *Toninia subnitida*

KIRSCHSTEINIOTHELIA D. Hawksw. Omitted as a totally saprophytic genus

KNUFIA L. J. Hutchinson & Unter.

- ***peltigerae** (Fuckel) Réblová & Unter. Syn.: *Capronia peltigerae* (Réblová et al. 2013)

KOERBERIA A. Massal.

- biformis** A. Massal.
- sonomensis** (Tuck.) Henssen = *Vestergrenopsis sonomensis*

KOERBERIELLA Stein

- wimmeriana** (Körber) Stein

KOHLMEYERA Schatz

- complicatula** (Nyl.) Schatz = *Mastodia tessellata* (Kohlmeyer et al. 2004)

LABROCARPON Etayo & Pérez-Ortega

- ***canariense** (D. Hawksw.) Etayo & Pérez-Ortega (Seavey & Seavey 2014a)

LAEVIOMYCES D. Hawksw. = **LICHENODIPLIS**

- ***lecanoricola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = *Lichenodiplis lecanoricola*
- ***pertusariicola** (Nyl.) D. Hawksw. = *Lichenodiplis pertusariicola*

LAHMIA Körber

- fueistingii** Körber = *Arthrorhaphis grisea*

LAMBIELLA Hertel

- caeca** (J. Lowe) Resl & T. Sprib. Syns.: *Lecidea caeca*, *Rimularia caeca* (Resl et al. 2015)
furvella (Nyl. ex Mudd) M. Westb. & Resl Syns.: *Lecidea furvella*, *Rimularia furvella* (Resl et al. 2015)
gyrizans (Nyl.) M. Westb. & Resl Syn.: *Rimularia gyrizans* (Resl et al. 2015)
impavida (Th. Fr.) M. Westb. & Resl. Syns.: *Lecidea impavida*, *Rimularia impavida* (Resl. et al. 2015)
***insularis** (Nyl.) T. Sprib. (Spribille et al. 2014a) Syns.: *Lecidea insularis*, *Rimularia insularis*
sphacelata (Th. Fr.) M. Westb. & Resl Syns.: *Lecidea sphacelata*, *Rimularia sphacelata* (Resl et al. 2015)

LASALLIA Mérat

- caroliniana** (Tuck.) Davydov, Peršoh & Rambold Syn.: *Umbilicaria caroliniana* (Davydov et al. 2010)
papulosa (Ach.) Llano Syns.: *Umbilicaria pustulata* var. *papulosa*, *U. papulosa*
pensylvanica (Hoffm.) Llano Syn.: *Umbilicaria pensylvanica*
pustulata (L.) Mérat Syn.: *Umbilicaria pustulata*
pustulata subsp. *papulosa* (Ach.) W. A. Weber = *L. papulosa*

LASIOSPHAERIOPSIS D. Hawksw. & Sivan.

- *stereocaulicola** (Lindsay) O. E. Eriksson & R. Sant. (Zhurbenko & Daniëls 2003)

LATHAGRIUM (Ach.) Gray (Otálora et al. 2014)

- auriforme** (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema auriculatum*, *C. auriforme*, *C. granosum* auct.
cristatum (L.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema cristatum*, *C. cristatum* var. *marginale*
dichotomum (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema dichotomum* *C. fluviatile*, *C. stenophyllum*
fuscovirens (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema furvum*, *C. fuscovirens*, *C. tuniforme*
undulatum (Flotow) Otálora, P. M. Jørg. & Wedin Syn.: *Collema undulatum*

LAUDERLINDSAYA J. C. David & D. Hawksw. (McCune 1997a) = *Normandina* (Muggia et al. 2010)

- *borreri** (Tul.) J. C. David & D. Hawksw. (McCune 1997a) = *Normandina pulchella*

LAURERA Rchb.

- megasperma** (Mont.) Riddle Syns.: *Campylothelium nitidum*, *Clathroporina diphloea*
subdisjuncta (Müll. Arg.) R. C. Harris
madreporiformis (Eschw.) Riddle = *Bathelium madreporiforme* (Harris 1995a)
varia (Fée) Zahlbr. = misidentification for North America

LECANACTIS Körber

- abietina** (Ach.) Körber
[**Bacidia akompsa** (Tuck.) Fink]
californica Tuck.
dubia G. Merr.
epileuca (Nyl.) Tehler Syns.: *Platygrapha subattingens*, *Schismatomma subattingens*
salicina Zahlbr.
amylacea (Ehrh. ex Pers.) Arnold = *Lecanographa amylacea*
chloroconia Tuck. = *Cresponea chloroconia*
dimelaenoides Egea & Torrente = *Lecanographa dimelaenoides*
***grumulosa** (Dufour) Fr. = *Lecanographa grumulosa*
illicibrosa (Dufour) Fr. = *Lecanographa amylacea*
megaspora (G. Merr.) Brodo = *L. abietina*
nashii Egea & Torrente = *Lecanographa hypothallina*
patellarioides (Nyl.) Vainio = *Bactrospora patellarioides*
premnea (Ach.) Arnold = *Cresponea premnea*
ravenelii (Tuck.) R. C. Harris = *Opegrapha ravenelii*
subattingens (Nyl.) R. C. Harris = *L. epileuca*

subdryophila Follmann & Vězda = *Lecanographa subdryophila*
zahlbruckneri Herre (Fink 1935) = *L. californica* (Ryan & Tehler 2004)

LECANIA A. Massal.

arizonica B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)
brunonis (Tuck.) Herre
#**caloplacicola** B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)
chalcophila B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)
coeruleorubella (Mudd) M. Mayrhofer (van den Boom & Ryan 2004b)
constricta W. A. Weber
croatica (Zahlbr.) Kotlov (Harris & Lendemer 2010)
cuprea (A. Massal.) van den Boom & Coppins Syn.: *Bacidia cuprea*, *B. cupreorosella*, *Bilimbia cupreorosella*
cyrtella (Ach.) Th. Fr. Syn.: *Biatora cyrtella*, *Lecidea cyrtella*
dubitans (Nyl.) A. L. Sm.
dudleyi Herre
erysibe (Ach.) Mudd
flavescens Lynge (Thomson 1997)
franciscana (Tuck.) K. Knudsen & Lendemer Syns.: *Biatora franciscana*, *Catillaria franciscana* (Knudsen & Lendemer 2007)
fructigena Zahlbr.
fuscella (Schaerer) Körber
fuscelloides B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)
[**Catillaria groenlandica** Lynge]
hassei (Zahlbr.) W. Noble Syn.: *Solenopsora hassei*
hutchinsiae (Nyl.) A. L. Sm. (Spribille et al. 2010)
inundata (Hepp ex Körber) M. Mayrhofer (van den Boom & Ryan 2004b)
madida Reese Naesb. & Björk (Reese Naesborg 2008)
naegelii (Hepp) Diederich & van den Boom Syn.: *Bacidia naegelii*, *Bilimbia naegelii* (Ekman 1996)
nylanderiana A. Massal.
pacifica Zahlbr. ex B. D. Ryan & van den Boom (van den Boom & B. D. Ryan 2004b)
polycycla (Anzi) Lettau (van den Boom & B. D. Ryan 2004b)
prasinoides Elenkin (Reese Naesborg 2008)
rabenhorstii (Hepp) Arnold (van den Boom & B. D. Ryan 2004b)
ryaniana van den Boom (van den Boom & Ryan 2004b)
shastensis Herre
stigmatella (Tuck.) S. Ekman (Ekman 1996) Syn.: *Bacidia stigmatella*
subcaesia (Nyl.) B. de Lesd.
subfuscula (Nyl.) S. Ekman (Ekman 1996) Syns.: *Bacidia sibiriensis*, *B. subfuscula*
toninioides Zahlbr.
turicensis (Hepp) Müll. Arg.
albariella (Nyl.) Müll. Arg. = *L. turicensis*
alpivaga Th. Fr. = *Halecania alpivaga*
arctica Lynge = *Caloplaca diphyodes*
brattiae B. D. Ryan & van den Boom (van den Boom & Ryan 2004b) = *L. hassei* (Knudsen & Lendemer 2007)
californica (Zahlbr.) Fink = *L. turicensis* (van den Boom & Ryan 2004b)
cyathiformis Szatala (Tavares et al. 1997) = *Solenopsora cyathiformis*
cyrtellina (Nyl.) Sandst. = *L. cyrtella*
curvescens (Mudd) A. L. Sm. = *Bryonora curvescens*
dimera (Nyl.) Th. Fr. = *L. dubitans*
disceptans (Nyl.) Lynge = *Halecania alpivaga* (Dillman et al. 2011)
pepegospora H. Magn. = *Halecania pepegospora*
perproxima auct. = uncertain species of *Lecania*, perhaps *L. chalcophila* (van den Boom & Ryan 2004b)
perproxima (Nyl.) Zahlbr. = *Caloplaca atroalba* (van den Boom & Ryan 2004b)
subdispersa B. D. Ryan [non (Nyl. ex Hasse) Hasse] = *L. franciscana*

subdispersa (Nyl. ex Hasse) Hasse = Toninia subdispersa
syringea (Ach.) Th. Fr. = L. fuscella
tenera (Nyl.) Clauzade & Cl. Roux = Cliostomum tenera
thallophila H. Magn. = Halecania alpivaga

LECANOGRAPHA Egea & Torrente

aggregata Egea & Torrente (Egea et al. 2004b, as Lecanographa “aff.” aggregata)
amylacea (Ehrh. ex Pers.) Egea & Torrente Syns.: Lecanactis amylacea, L. illecebrosa, Opegrapha illecebrosa
brattiae (Egea & Ertz) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha brattiae
dimelaenoides (Egea & Torrente) Egea & Torrente Syn.: Lecanactis dimelaenoides
***grumulosa** (Dufour) Egea & Torrente Syns.: Opegrapha diaphoroides, Lecanactis grumulosa, but questionable for North America
hypothallina (Zahlbr.) Egea & Torrente Syns.: Platygrapha hypothallina, Schismatomma hypothallinum, Opegrapha hypothallina, O. hassei, Lecanactis nashii
insolita Lendemer & K. Knudsen (Lendemer & Knudsen 2010)
lyncea (Sm.) Egea & Torrente (Egea et al. 2004b)
lynceoides (Müll. Arg.) Egea & Torrente (Egea et al. 2004b)
subdryophila (Follmann & Vězda) Egea & Torrente Syn.: Lecanactis subdryophila

LECANORA Ach.

achroa Nyl. (Lücking et al. 2011b)
achroides Vainio
actophila Wedd.
aitema (Ach.) Hepp Syn.: Lecidea aitema
alaskensis H. Magn.
albella (Pers.) Ach. var. **albella**
albella var. **rubescens** (Imshaug & Brodo) Lumbsch
albellula Nyl. (Printzen 2001)
albocaesiella B. D. Ryan & T. H. Nash (Ryan et al. 2004)
albula (Nyl.) Hue
aleutica H. Magn.
allophana (Ach.) Nyl.
anakeestiicola Lendemer & E. Tripp (Lendemer & Tripp 2015)
annularis Lendemer & K. Knudsen (Knudsen et al. 2014c)
anopta Nyl. Syns.: Biatora pullula, Lecidea pullula (Pérez-Ortega et al. 2010)
anoptiza Nyl.
apochroeoides Vainio
appalachensis Lendemer & R. C. Harris (Lendemer et al. 2013)
arenisaxicola B. D. Ryan & T. H. Nash (Ryan et al. 2004)
argentata (Ach.) Malme
argentea Oxner & Volkova
argopholis (Ach.) Ach.
atrosulphurea (Wahlenb.) Ach.
austrocalifornica Lendemer & K. Knudsen (Lendemer & Knudsen 2009)
bicincta Ramond
boligera (Norman ex Th. Fr.) Hedl.
brattiae B. D. Ryan & T. H. Nash (Ryan et al. 2004)
brodoana Lumbsch & T. H. Nash
[**Parmularia brouardii** B. de Lesd.]
bryopsora (Doppelb. & Poelt) Hafellner & Türk (Dillman et al. 2012)
cadubriae (A. Massal.) Hedl. Syns.: Lecidea cadubriae, L. ramulicola
caesiorubella Ach. subsp. **caesiorubella**
caesiorubella subsp. **glaucomodes** (Nyl.) Imshaug & Brodo
caesiorubella subsp. **merrillii** Imshaug & Brodo
caesiorubella subsp. **saximontana** Imshaug & Brodo

caesiosora Poelt (Miller et al. 2005)
caesiosulphurea Vainio
californica Brodo
campestris (Schaerer) Hue
canadensis Lynge & H. Magn.
carneolutescens Nyl. (Lumbsch et al. 2003)
carpineae (L.) Vainio
cateilea (Ach.) A. Massal.
[Lecidea caulophylla] (Tuck.) Zahlbr.
cavicola Creveld (Nash et al. 1998)
cenisia Ach.
chlarotera Nyl.
chloroleprosa (Vainio) H. Magn. (Spribille et al. 2010)
chlorophaeodes Nyl.
cinereofusca H. Magn.
circumborealis Brodo & Vitik.
cladonioides Lynge
collatolica J. W. Thomson & T. H. Nash
comonduensis T. H. Nash & Hertel (Nash & Hertel 1997)
confusa Almb.
congesta Lynge
coniferarum Printzen (Printzen 2001)
conizaeoides Nyl. ex Crombie
cupressi Tuck.
demosthenesii Lumbsch & Messuti (Lumbsch et al. 2003)
densa (Śliwa & Wetmore) Printzen (Printzen 2001)
discoënsis Lynge
elapheia Stizenb. (Lücking et al. 2011b)
epanora (Ach.) Ach.
epibryon (Ach.) Ach.
expallens Ach.
farinaria Borrer
floridula Lumbsch
frustulosa (Dickson) Ach. (Spribille et al. 2010)
fuscescens (Sommerf.) Nyl. Syn.: *Lecidea fuscescens*
fuscidula Degel.
gangaleoides Nyl.
geophila (Th. Fr.) Poelt
glabrata (Ach.) Malme
granulifera (Ach.) Nyl.
groenlandica Lynge
gypsicola St. Clair & Newberry (Rajvanshi et al. 1998)
helicopis (Wahlenb.) Ach. (identification uncertain)
horiza (Ach.) Lindsay
hybocarpa (Tuck.) Brodo
hypocrocina Nyl. (Seavey & Seavey 2012)
hypopta (Ach.) Vainio Syn.: *Lecidea hypopta*
hypoptoides (Nyl.) Nyl.
impudens Degel. In eastern N.A. at least, a misapplied name (Lendemer et al. 2013)
imshaugii Brodo
inaurata C. A. Morse & Ladd (Morse & Ladd 2016)
insignis Degel.
intricata (Ach.) Ach.
intumescens (Rebent.) Rabenh.
iowensis Fink
jamesii J. R. Laundon (Tønsberg 1997)

kariana Räsänen
latens Printzen (Printzen 2001)
laxa (Šliwa & Wetmore) Printzen (Printzen 2001)
layana Lendemer (Lendemer 2015)
leprosa Fée
leptacina Sommerf.
leptacinella Nyl.
lividolutea Räsänen
louisianae B. de Lesd.
luteovernalis Brodo
marginata (Schaerer) Hertel & Rambold Syns.: *Lecidea marginata*, *L. elata*, *L. purissima*. See note under "*Lecidea amylacea*."
masana Lendemer & R. C. Harris (Lendemer et al. 2013)
maxima Lynge
melaena (Hedl.) Fink
mellea W. A. Weber
meridionalis H. Magn.
microbola I. M. Lamb
microfusca Lynge
miculata Ach.
minutella Nyl.
monticola H. Magn.
mughicola Nyl.
munzii K. Knudsen & Lendemer (Knudsen & Lendemer 2009c)
nashii B. D. Ryan (Ryan et al. 2004)
neoalbomarginata Gyelnik
neodegelii B. D. Ryan & T. H. Nash Syn.: *Squamarina degelii* (Ryan et al. 2004)
nordenskiöldii Vainio
nothocaesiella R. C. Harris & Lendemer (Lendemer et al. 2013)
ochraceorubescens Arnold (LaGreca & Lumbsch 2001)
orae-frigidae R. Sant.
oreinoides (Körber) Hertel & Rambold Syns.: *Lecidea oreinodes*, *L. tennesensis*, *L. tesselina*
orizabana Vainio (Lumbsch et al. 2003)
orosthea (Ach.) Ach. Syn.: *Lecidea orosthea*
pacifica Tuck. Syn.: *L. tetraspora*
paddensis (Tuck.) T. Sprib. Syns.: *Biatora paddensis*, *Lecidea paddensis* (McCune et al. 2014b)
pallidochlorina T. H. Nash, B. D. Ryan & Lumbsch (Ladd & Morse 2012)
peninsularis K. Knudsen, Lendemer & Elix (Knudsen et al. 2011a)
permutata Zahlbr.
perplexa Brodo
phaeophora (Stizenb.) H. Magn. Syn.: *Lecidea phaeophora*, *Biatora phaeophora*
phryganitis Tuck.
placidensis (Magnusson) Knoph, Leuckert & Rambold (Knoph & Leuckert 1994) Syns.: *Lecidea placidensis*, *Lecidella placidensis*, *Fuscidea placidensis*
plumosa Müll. Arg. (Nash et al. 1998)
poliophaea (Wahlenb.) Ach.
poluninii Lynge
polytropa (Ehrh.) Rabenh.
populicola (DC.) Duby
pringlei (Tuck.) I. M. Lamb subsp. **pringlei** Syn: *Lecidea pringlei*
pringlei subsp. **brandegei** (Tuck.) Ryan (Ryan et al. 2004)
proserpens Nyl. (Barrett & Thomson 1975)
protervula Stirton (Stirton 1876)
pseudargentata Lumbsch (LaGreca & Lumbsch 2001)
pseudistera Nyl.
pseudolivacea Zahlbr. (Esslinger & Tucker 2009)

pseudomellea B. D. Ryan
pseudosarcopidoides M. Brand & van den Boom (Hutten et al. 2013)
pulicaris (Pers.) Ach.
[Biatora pullula Tuck.] (Printzen 1995)
reagens Norman
rhodi Szatala (LaGreca & Lumbsch 2001)
rubicunda Bagl.
rupicola (L.) Zahlbr. Syn.: *Glaucumaria rupicola*, *G. sordida*
salicicola H. Magn.
saligna (Schrader) Zahlbr. Syn.: *Lecanoropsis saligna*
sambuci (Pers.) Nyl.
sarcopidoides (A. Massal.) Hedl. (Hutten et al. 2013)
saxigena Lendemer & R. C. Harris (Lendemer & Harris 2014d)
scrobiculata (Th. Fr.) Øvstedal & Elix Syn.: *Lecidea scrobiculata* (Elix & Øvstedal 2004)
semitensis (Tuck.) Zahlbr.
sierrae B. D. Ryan & T. H. Nash
simeonensis K. Knudsen & Lendemer (Lendemer & Knudsen 2009)
sophodopsella Nyl.
stenotropa Nyl. (LaGreca & Lumbsch 2001)
stramineoalbida Vainio (Lendemer & Knudsen 2011)
strobilina (Sprengel) Kieffer
subcavicola B. D. Ryan (Ryan et al. 2004)
subimmergens Vainio
subintricata (Nyl.) Th. Fr.
subpallens Zahlbr. (Lumbsch et al. 1997, Lendemer 2004e)
subravida Nyl. (Hutten et al. 2013)
subrugosa Nyl.
subsaligna M. Brand & van den Boom (van den Boom & Brand 2008)
substrobilina Printzen (Printzen 2001)
sulphurea (Hoffm.) Ach. Syn.: *Lecidea sulphurea*
swartzii (Ach.) Ach. (Nash et al. 1998)
symmicta (Ach.) Ach. Syn.: *Lecidea symmicta*
texana W. A. Weber
thallophila H. Magn.
thysanophora R. C. Harris (Harris et al. 2000)
tristiuscula H. Magn.
tropica Zahlbr. (Seavey & Seavey 2012)
umbrosa Degel.
urceolaria (Fr.) Wetm.
utahensis H. Magn. (Knudsen 2012)
valesiaca (Müll. Arg.) Stizenb.
varia (Hoffm.) Ach.
vegae Malme
viriduloflava B. de Lesd.
willeyi Tuck.
wisconsinensis H. Magn.
xanthosora B. D. Ryan & Poelt
xylophila Hue
zeroensis Lendemer (Knudsen et al. 2011b)
agardhiana Ach. (Šliwa 2007b) = *Myriolecis agardhiana*
albescens (Hoffm.) Branth & Rostrup (Šliwa 2007b, Laundon 2010) = *Myriolecis albescens*
albomarginata (B. de Lesd.) Zahlbr. = *Aspicilia albomarginata*
albopruinosa Looman = an *Aspicilia* sp.
alboradiata H. Magn. = *Aspicilia alboradiata*
aliena Zahlbr. = *Aspicilia aliena*
alphoplaca (Wahlenb.) Ach. = *Lobothallia alphoplaca*

alpina Sommerf. = Bellemerea alpina
 americana (B. de Lesd.) Zahlbr. = Aspicilia americana
 andrewii B. de Lesd. (Śliwa 2007b) = Myriolecis andrewii
 annulata Lynge = Aspicilia annulata
 anseris Lynge = Aspicilia anseris
 applegatei Herre = Bellemerea alpina (Owe-Larsson & Ryan 2007)
 aquatica (Körber) Hepp = Aspicilia aquatica
 arctica Lynge = Aspicilia arctica
 arizonica (Tuck. ex Willey) W. A. Weber = Omphalora arizonica
 atra (Hudson) Ach. = Tephromela atra
 atriseda (Fr.) Nyl. = Protoparmelia atriseda
 atosanguinea G. Merr. = Caloplaca atosanguinea
 atrynea (Ach.) Röhl. = Lecanora cenisia
 badia (Hoffm.) Ach. = Protoparmelia badia
 barkmaniana Aptroot & Herk (Kaminsky et al. 2013) = misidentification of L. floridula (Lendemer & Harris 2014b)
 basaltica Lynge = Aspicilia narssaquensis
 beringii Nyl. ("behringii") = L. zosteræ var. beringii (Śliwa 2007b)
 bipruinosa Fink = Protoparmeliopsis bipruinosa
 bockii (Fr.) Rabenh. = Rimularia gibbosa
 bolanderi Tuck. = Cladidium bolanderi
 caesiocinerea Nyl. ex Malbr. = Circinaria caesiocinerea
 caesiopruinosa H. Magn. = Aspicilia caesiopruinosa
 caesiorubella subsp. lathamii Imshaug & Brodo = L. subpallens
 caesiorubella subsp. prolifera (Fink) R. C. Harris = L. subpallens
 calcarea (L.) Sommerf. = Circinaria calcarea
 cancriformis (Hoffm.) Vainio = L. caesiorubella Ach. subsp. caesiorubella
 candida (Anzi) Nyl. = Aspicilia candida
 candida (Anzi) Nyl. var. nikrapensis (Darb.) Oxner (Barrett & Thomson 1975) = Aspicilia candida
 carlottiana Lewis & Śliwa (Lewis & Śliwa 2012) = Myriolecis carlottiana
 cascadiensis H. Magn. = Protoparmeliopsis garovaglii
 castanea (Hepp) Th. Fr. = Bryonora castanea
 chlarona (Ach.) Nyl. = L. pulicaris
 chlorophana (Wahlenb.) Ach. = Pleopsidium chlorophanum
 chloropolia (Erichsen) Almb. = L. impudens for most North American records
 christoi W. A. Weber = Rhizoplaca phaedrophthalma
 chrysoleuca (Sm.) Ach. = Rhizoplaca chrysoleuca
 cinerea (L.) Sommerf. = Aspicilia cinerea
 cinereofusca var. appalachensis Brodo = L. saxigena (Lendemer & Harris 2014d)
 cinereorufescens (Ach.) Hepp = Bellemerea cinereorufescens
 cingulata Zahlbr. = Aspicilia cingulata
 circinata (Pers.) Ach. = Lobothallia radiosa
 coilocarpa auct. = L. circumborealis
 coilocarpa (Ach.) Nyl. = L. pulicaris
 composita Lynge = Aspicilia composita
 concinna J. W. Thomson = Aspicilia concinna
 conizaea auct. = L. strobilina
 conizaea (Ach.) Nyl. ex Crombie = L. expallens
 constipans (Nyl.) Nyl. (Fink 1935) = Edrudia constipans
 contorta (Hoffm.) J. Steiner = Circinaria contorta
 contractula Nyl. = Myriolecis contractula
 crenulata Hooker (Śliwa 2007b) = Myriolecis crenulata
 crustacea (Savicz) Zahlbr. (Ryan & Nash 1997b) = Protoparmeliopsis crustacea
 degelii T. Schauer & Brodo = L. cinereofusca var. cinereofusca
 demissa (Körber) Zahlbr. = Caloplaca demissa
 deplanans Nyl. = Ionaspis lacustris (Lendemer & Yahr 2004)

desertorum Kremp. North American reports are *Circinaria arida*
 diffracta Ach. = *Protoparmeliopsis muralis*
 diphasia Tuck. = *Caloplaca diphasia*
 disceptans Nyl. = *Halecania alpivaga* (Dillman et al. 2011)
 dispersa (Pers.) Sommerf. = *Myriolecis dispersa*
 dispersoareolata (Schaerer) Lamy = *Protoparmeliopsis dispersoareolata*
 disserpens (Zahlbr.) H. Magn. = *Aspicilia disserpens*
 distans (Pers. ex Ach.) Nyl. = *L. populicola*
 effusa (Hoffm.) Ach. = *L. saligna*
 elevata Lynge = *Aspicilia elevata*
 elmorei E. D. Rudolph = *Circinaria elmorei*
 epulotica (Ach.) Nyl. = *Hymenelia epulotica*
 erythrantha Tuck. (Fink 1935) = *Caloplaca erythrantha* (Wetmore 2007b)
 exigua f. pruinosa Merrill = *Rinodina hallii* (Sheard 2010)
 eyerdamii Herre = *L. xylophila*
 filamentosa (Stirton) Elix & Palice (Pérez-Ortega et al. 2010; Palice et al. 2011) = *Palicella filamentosa*
 (Rodríguez Flakus & Printzen 2014)
 fimbriata H. Magn. = *Aspicilia fimbriata*
 flavida Hepp = *Eiglera flavida*
 flavopunctata Tønsberg = *Biatora flavopunctata*
 floridana Tuck. = *Caloplaca floridana*
 flotoviana Sprengel (Ryan et al. 2004) = *Myriolecis semipallida* for North American reports (Śliwa 2007a, Zhao et al. 2016)
 flowersiana H. Magn. = *Myriolecis flowersiana*
 frustulosa auct. N. A. in part = *L. argopholis* (Vänska 1984)
 fugiens Nyl. (Ryan et al. 2004, as *Lecanora* “aff.” *fugiens*, Śliwa 2007b) = *Myriolecis fugiens*
 fuliginosa Brodo = *L. argentea*
 fulva Schwein. (Fink 1935) Identity uncertain (Harris 2004)
 fuscidula Degelius = *L. minutella* Nyl. (LaGreca & Lumbsch 2001)
 galactina (Ach.) Nyl. (Fink 1935) = *Myriolecis albescens* (Scholz 2000, Zhao et al. 2016))
 galactinula Vainio = *L. pseudistera*
 garovaglii (Körber) Zahlbr. subsp. *garovaglii* = *Protoparmeliopsis garovaglii*
 garovaglii subsp. *cascadensis* (H. Magn.) B. D. Ryan & T. H. Nash (Ryan et al. 2004) = *Protoparmeliopsis garovaglii*
 geiserae B. D. Ryan (Ryan et al. 2004) = *Protoparmeliopsis geiserae*
 gelida (L.) Ach. = *Placopsis gelida*
 gibbosa (Ach.) Nyl. = *Circinaria gibbosa*
 gibbosula H. Magn. = *Circinaria gibbosa*
 glaucomela Tuck. = *Pertusaria glaucomela*
 glaucophana Nyl. ex Hasse = *Rhizoplaca glaucophana*
 glaucopsina Nyl. = *Aspicilia glaucopsina*
 granatina Sommerf. = *Euopsis granatina*
 granifera Ach. = *Malmidea granifera*
 grandis H. Magn. = *Protoparmelia badia*
 grantii H. Magn. = *L. xylophila*
 gyalectodes Nyl. = *Topelia gyalectodes*
 gyrophorica Lendemer (Knudsen & Lendemer 2009c) = *Protoparmeliopsis gyrophorica*
 hagenii (Ach.) Ach. = *Myriolecis hagenii*
 haydenii Tuck. = *Rhizoplaca haydenii*
 heteroplaca Zahlbr. = *Aspicilia heteroplaca*
 holophaea (Mont.) Nyl. = *Solenopsora holophaea*
 hypospilota Vainio = *L. oreinoides*
 incusa (Fr.) Vainio = *Caloplaca demissa*
 intrudens H. Magn. = *Miriquidica intrudens*
 invadens H. Magn. (Śliwa 2007b) = *Myriolecis invadens*
 juniperina Śliwa (Ryan et al. 2004) = *Myriolecis juniperina*

kofae B. D. Ryan & T. H. Nash = *Protoparmeliopsis kofae*
 laatokkaensis (Räsänen) Poelt = *Protoparmeliopsis laatokkaensis*
 lacustris (With.) Nyl. = *Ionaspis lacustris*
 laevata (Ach.) Nyl. = *Aspicilia laevata*
 laevis Poelt = *L. horiza*, but N. American records are *L. xylophila*
 lavata (H. Magn.) Fink = *Ionaspis lavata*
 lentigera (Weber) Ach. = *Squamarina lentigera*
 lesleyana (Darb.) Paulson = *Aspicilia lesleyana*
 limitata H. Magn. = *Aspicilia limitata*
 marginalis Hasse = *Rhizoplaca marginalis*
 mastoidea Lynge = *Aspicilia berntii*
 mastrucata (Wahlenb.) Ach. (Wetmore 1967) = *Sagedia mastrucata*
 mazatzalensis B. D. Ryan & T. H. Nash = *Protoparmeliopsis mazatzalensis*
 melanaspis (Ach.) Ach. = *Lobothallia melanaspis*
 melanophthalma (DC.) Ramond = *Rhizoplaca melanophthalma*
 mniaroeiza Nyl. = *Rinodina mniaroeiza*
 morioides (Blomb. ex Arnold) Blomb. = *Clauzadeana macula*
 muralis (Schreber) Rabenh. = *Protoparmeliopsis muralis*
 muralis var. brunneola (Mereschk.) Ryan & T. H. Nash (Nash et al. 1998) = *Protoparmeliopsis muralis*
 muralis var. versicolor (Pers.) Tuck. = *Protoparmeliopsis muralis*
 mutabilis Sommerf. = *L. intricata*
 mutabilis (Ach.) Nyl. = *Megaspora verrucosa*
 myrina Fée (Fink 1935) Identity uncertain; possible orthographic error for *L. myrinii* (Esslinger & Tucker 2009)
 myrinii (Fr.) Tuck. = *Aspilidea myrinii*
 narssaquensis Lynge = *Aspicilia narssaquensis*
 nephaea Sommerf. = *Protoparmelia nephaea*
 nevadensis H. Magn. = *Protoparmeliopsis garovaglii*
 nigromarginata H. Magn. = *Rhizoplaca nigromarginata*
 nikrapensis (Darb.) Zahlbr. = *Aspicilia nikrapensis*
 novae-semlicae Zahlbr. = *Aspicilia novae-semlicae*
 novomexicana H. Magn. = *Rhizoplaca novomexicana*
 novomexicana B. de Lesd. = identity uncertain
 obpallens Nyl. ex Hasse = *Acarospora obpallens*
 occidentalis (Lynge) Lynge = *L. argopholis*
 ochrococca (Nyl.) Clauzade & Cl. Roux = *Protoparmelia ochrococca*
 odora (Ach.) Tuck. (Fink 1935) = *Ionaspis odora*
 olivacea (Bagl. & Carestia) J. Steiner (Herre 1911, Fink 1935) = *Lecanora pseudolivacea*
 olivaceopallida H. Magn. = *Aspicilia olivaceopallida*
 opiniconensis Brodo = *Rhizoplaca opiniconensis*
 oregana Tuck. = *L. argopholis*
 pachythallina Lynge = *L. geophila*
 palanderi Vainio = *L. zosteriae*
 pallescens (L.) Röhl = *Ochrolechia pallescens* (L.) A. Massal., but misidentification for North America
 pallescens var. upsaliensis (L.) Flotow = *Ochrolechia upsaliensis*
 pallida (Schreber) Rabenh. var. pallida = *L. albella* var. *albella*
 pallida var. rubescens Imshaug & Brodo = *L. albella* var. *rubescens*
 parisiensis Nyl. = *L. horiza*
 pelobotrya (Wahlenb.) Sommerf. = *Amygdalaria pelobotryon*
 peltata (Ramond) Steudel = *Protoparmeliopsis peltata*
 peltastictoides Hasse (Knudsen 2003) = *Aspicilia peltastictoides* (Knudsen & Kocourková 2013)
 percrenata H. Magn. (Śliwa 2007b) = *Myriolecis percrenata*
 pergibbosa H. Magn. = *Aspicilia pergibbosa*
 perpruinosa Fröberg (Śliwa 2007b) = *Myriolecis perpruinosa*
 perradiata Nyl. = *Aspicilia perradiata*
 persimilis (Th. Fr.) Nyl. = *Myriolecis persimilis*

pertusa Lynge = *Aspicilia pertusa*
 phaedrophthalma Poelt var. phaedrophthalma = *Rhizoplaca phaedrophthalma*
 phaedrophthalma var. christoi (W. A. Weber) B. D. Ryan (Ryan et al. 2004) = *Rhizoplaca phaedrophthalma*
 phaeobola Tuck. = *Protoparmelia ochrococca*
 pinastri (Schaerer) H. Magn. = *L. pulicaris*
 pinguis Tuck. = *Protoparmeliopsis pinguis*
 piniperda Körber = *L. albellula* Nyl. (Printzen 2001)
 pleiospora Nyl. = *Acarospora thelococcoides*
 pleistospora Nyl. = *Acarospora thelococcoides*
 plicigera Zahlbr. = *Aspicilia plicigera*
 polychroma (Anzi) Nyl. = *Aspicilia polychroma*
 praecrenata Nyl. = *Aspicilia praecrenata*
 praeradiosa Nyl. = *Lobothallia praeradiosa*
 privigna (Ach.) Nyl. = *Polysporina simplex*
 privigna var. revertens Tuck. = *Polysporina simplex*
 pruinosa Chaub. Not in North America
 pseudochlarotera Brodo = *L. hybocarpa*
 punicea (Sw.) Ach. North American records are *Haematomma persoonii*
 radiosa (Hoffm.) Schaerer = *Lobothallia radiosa*
 ramulicola (H. Magn.) Printzen & P. May (Printzen & May 2002) = *L. filamentosa*
 reptans Looman = *Aspicilia reptans*
 riparia G. Merr. non (Flotow) M. Steiner = *L. xylophila*
 rolleana (Hue) Zahlbr. = *Aspicilia rolleana*
 rosulata (Körber) Stizenb. = *Aspicilia rosulata*
 rubina (Vill.) Ach. = *Rhizoplaca chrysoleuca*
 rugosa auct. (Fink 1935) = *L. chlarotera* (Brodo 1984)
 rugosella Zahlbr. = *L. chlarotera* (Ryan et al. 2004)
 ryrkaipiae H. Magn. = *Aspicilia ryrkaipiae*
 salina H. Magn. = *Myriolecis salina*
 sanguinea (Kremp.) Mig. = *Bellemeria sanguinea*
 saxicola (Pollich) Ach. = *Protoparmeliopsis muralis*
 schizochromatica Pérez-Ortega, T. Sprib. & Printzen (Pérez-Ortega et al. 2010) = *Palicella*
 schizochromatica (Rodríguez Flakus & Printzen 2014)
 schofieldii Brodo (Brodo 2010) = *Myriolecis schofieldii*
 scotopholis (Tuck.) Timdal = *Miriquidica scotopholis*
 semipallida H. Magn. (Fryday 2004a) = *Myriolecis semipallida*
 sipeana H. Magn. = *Aspicilia sipeana*
 sordida (Pers.) Th. Fr. = *L. rupicola*
 spodophaeiza Nyl. (Fink 1935) = *Lecania aipospila* (Wahlenb.) Th. Fr., but misidentification for North America (Ryan et al. 2004)
 stenospora Stizenb. = *Pleopsidium flavum*
 straminea Ach. = *Myriolecis straminea*
 stygioplaca Nyl. = *Aspicilia subradians*
 subdispersa Nyl. ex Hasse = *Toninia subdispersa*
 subfusca (L.) Ach. = nom. rej. prop. = *L. allophana*
 subfusca var. campestris (Schaerer) Rabenh. = *Lecanora campestris*
 subfuscata H. Magn. = *L. argentata*
 sublapponica Zahlbr. = *Aspicilia sublapponica*
 subolivascens Nyl. = *Caloplaca demissa*
 subpallida G. Merr. non C. Knight = *L. subpallens*
 subradians Nyl. = *Aspicilia subradians*
 subradiascens Nyl. = *Aspicilia subradians*
 superfluens H. Magn. = *L. geophila*
 supertegens (Arnold) Zahlbr. = *Aspicilia supertegens*
 sylvestris (Nyl.) Zahlbr. = *L. rubicunda*

symmictera Nyl. = *L. symmicta*
tartarea (L.) Ach. = *Ochrolechia tartarea*
tenera (Nyl.) Crombie = *Cliostomum tenerum*
tenuis H. Magn. = *Aspicilia tenuis*
tesselina (Tuck.) Zahlbr. = *L. oreinoides*
tetraspora H. Magn. = *L. pacifica*
thamnitis Tuck. = *Cladidium bolanderi*
thamnoplaca Tuck. = *Lobothallia alphoplaca*
thelococcoides Nyl. = *Acarospora thelococcoides* (Lendemer 2004a)
thomsonii H. Magn. = *Rhizoplaca novomexicana* (Ryan & Nash 1991, Zhao et al. 2016)
torrida Vainio = *Myriolecis straminea*
turbinata Poelt & Leuckert = *L. zosteræ* var. *beringii* (Śliwa 2007b)
umbrina (Ach.) A. Massal. = *L. hagenii* (Śliwa 2007b)
urceolaria (Fr.) Wetmore = *Megaspora verrucosa*
varia subsp. *densa* Śliwa & Wetmore (Śliwa & Wetmore 2000) = *L. densa*
varia subsp. *laxa* Śliwa & Wetmore (Śliwa & Wetmore 2000) = *L. laxa*
variolascens auct. = *L. impudens* for North American records
[#]*verrucariicola* B. D. Ryan (Ryan et al. 2004) = *Miriquidica verrucariicola* (Knudsen et al. 2015)
verrucigera (Hue) Zahlbr. = *Aspicilia verrucigera*
verrucosa (Ach.) Laurer = *Megaspora verrucosa*
versicolor (Pers.) Ach. = *Protoparmeliopsis muralis*
victoriae (F. Wilson) “Tibell” Erroneous creation by typographic error (in ver. 10), should be *Mycocalicium victoriae*
weberi B. D. Ryan = *Rhizoplaca weberi*
wetmorei Śliwa (Ryan et al. 2004) = *Myriolecis wetmorei*
xanthophana Nyl. = *Acarospora xanthophana*, but a misidentification for North America
zosteræ (Ach.) Nyl. var. *zosteræ* = *Myriolecis zosteræ*
zosteræ var. *beringii* (Nyl.) Śliwa (Śliwa 2007b) = *Myriolecis zosteræ*
zosteræ var. *palanderi* (Vainio) Śliwa 2007b) = *Myriolecis zosteræ*

LECANOROPSIS M. Choisy

saligna (Schrader) M. Choisy = *Lecanora saligna*

LECIDEA Ach.

admiscens Nyl.
albofuscescens Nyl.
albohyalina (Nyl.) Th. Fr. Syn.: *Biatora albohyalina* (Printzen & Tønsberg 1999)
alpestris Sommerf.
anniculensis J. Lowe Possibly a syn. of *Brianaria lutulata* (Coppins & Fryday 2006b)
atomaria Th. Fr.
atrobrunnea (Ramond ex Lam. & DC.) Schaerer subsp. ***atrobrunnea***
atrobrunnea subsp. ***deplanaica*** Hertel & Leuckert (Hertel & Leuckert 2011)
atrobrunnea subsp. ***planaica*** Hertel & Leuckert (Hertel & Leuckert 2011)
atromarginata H. Magn.
atroviridis (Arnold) Th. Fr.
auriculata Th. Fr. subsp. ***auriculata*** (Hertel & Andreev 2003)
auriculata subsp. ***brachyspora*** Th. Fr. (Hertel & Andreev 2003)
baffiniana H. Magn.
betulicola (Kullh.) H. Magn. f. ***endamyalea*** (Hedl.) Hinter. (Printzen & Tønsberg 1999)
brachyspora (Th. Fr.) Nyl.
brodoana Hertel & Leuckert (Hertel & Printzen 2004)
brunneofusca H. Magn.
californica Zahlbr.
carneoalbans Nyl.
carnulenta (Tuck.) Fink
cascadensis H. Magn.

cellularis Lowe
cinerata Zahlbr.
commaculans Nyl. (Fryday 2006)
confluens (Weber) Ach.
confluentula Müll. Arg. (Knudsen & Kocourková 2014b)
congesta Fink
crassilabra Müll. Arg.
crisima Nyl.
cruciaria Tuck.
cyrtidia Tuck. (Harris 1997)
deminutula H. Magn.
despecta Th. Fr.
diducens Nyl.
eckfeldtii Zahlbr.
ecrustacea (Anzi ex Arnold) Arnold
enalla Nyl. (Printzen 1995)
enterophaea Vainio
epiphaea Nyl. (Spribille et al. 2010)
erythrophaea Flörke ex Sommerf.
extenuata Vainio
flavidolivens (Tuck.) Fink
floridensis Nyl.
fuliginosa Taylor
furvonigrans (Tuck. ex Willey) Zahlbr. (Coppins & Fryday 2006b)
fuscatoatra Nyl.
fuscoatra (L.) Ach.
goniophiloides B. de Lesd.
haerjedalica H. Magn. (Fryday 2004a)
hassei Zahlbr.
herteliana Fryday & Coppins (Fryday & Coppins 2012)
hoganii E. Tripp & Lendemer (Tripp & Lendemer 2015)
holopolia (Tuck.) Zahlbr.
homosema Nyl.
hypomela Nyl.
intropallida Fink
katahdinensis Degel.
kingmanii (Hasse) Hertel & S. Ekman (Hertel & Printzen 2004)
laboriosa Müll. Arg. (Hertel 1995)
labradorica Arnold
lactea Flörke ex Schaerer (McCune et al. 2014b)
lapicida (Ach.) Ach. (Coppins 2002; Hertel & Andreev 2003)
leprarioides Tønsberg
leucothallina Arnold
lithophila (Ach.) Ach.
louisianae B. de Lesd.
lyngei Degel.
malmeana Zahlbr. (Spribille et al. 2010)
mamillana Tuck.
mannii Tuck.
meiocarpa Nyl. var. **tacomensis** Printzen & Tønsberg (Printzen & Tønsberg 1999)
melaphanoides Nyl.
merrillii H. Magn.
microps Tuck. (Fink 1935, Perlmutter & Greene 2005)
micytho Tuck. ex Willey (Coppins & Fryday 2006b)
moreliiensis B. de Lesd.
mutabilis Fée

nearingii H. Magn.
nylanderi (Anzi) Th. Fr.
occidentalis Lynge
olivascens Th. Fr.
oreophila K. Knudsen & Kocourk. (Knudsen & Kocourková 2014a)
pacifica Herre
paupercula Th. Fr. (Hertel & Andreev 2003)
peliaspis (Tuck.) Zahlbr.
perlatolica Hertel & Leuckert (Hertel & Printzen 2004)
phaeopelidna Vainio
phaeops Nyl.
picea Lynge
plana (J. Lahm) Nyl.
plebeja Nyl.
polaris Lynge
polycocca Sommerf.
populina Müll. Arg. ex Nyl. Syn.: *Micarea populina*
praenubila Nyl.
praetermissa Tønsberg
promiscens Nyl.
protabacina Nyl.
pseudaglaea Hertel (Hertel & Printzen 2004)
pulla Lowe
pumicicola H. Magn.
ramulosa Th. Fr.
rivulorum H. Magn.
roseotincta Coppins & Tønsberg
rubrocastanea T. Sprib. & Printzen (Spribille & Printzen 2007)
sarcogynoides Körber (McMullin & Lendemer 2013)
sauteri Körber (Hertel & Printzen 2004)
scabridula Hedl. nom. illeg. (Spribille & Björk 2008)
silacea Ach.
somphoterella Vainio
sphaerella Hedl. = a species of *Lecania*? (Printzen 1995)
steineri Hertel
strasseri Zahlbr. (Spribille et al. 2010)
subaglaea B. de Lesd.
subcandida H. Magn.
subfilamentosa (Zahlbr.) Fryday (Fryday 2008)
subrhagadiella Lynge
swartzioidea Nyl.
syncarpa Zahlbr. (McCune 1998b)
tenayucae B. de Lesd.
tenuissima Lynge
tessellata Flörke
tessellata var. **caesia** (Anzi) Arnold
theodori Lynge
torquens Müll. Arg. = a species of *Lecanora*? (Printzen 1995)
trapelioides Printzen (Hertel & Printzen 2004)
truckeei Herre
turgidula Fr. Syn.: *Biatora turgidula*
umbonata (Hepp) Mudd
varians Ach. Syn.: *Biatora varians*, *Pyrrhospora varians* (Hertel & Printzen 2004), *Lecidea subtilis* (Lendemer & Harris 2014c)
versicolor Schwein. (Printzen 1995)
virginiensis Calk. & Nyl.

xanthococcoides Zahlbr.

ablephora Nyl. = Ramonia ablephora
acrocyanea (Th. Fr.) H. Magn. = Lecidella patavina
adironackii H. Magn. = Psilolechia clavulifera
aenea (Fr.) Nyl. = Miriquidica garovaglioii
aeruginosa Borrer = Trapeliopsis flexuosa
aglaea Sommerf. = Calvitimela aglaea
aglaeida Nyl. = Calvitimela aglaea
ahlesii (Hepp) Nyl. (Harris 1995b) = Bryobilimbia ahlesii
ahlesii var. nemoralis (J. Lowe) Fryday & Coppins (Coppins & Fryday 2006b) = Bryobilimbia ahlesii
var. nemoralis
aitema Ach. = Lecanora aitema
alaiensis Vainio = Lecidella patavina
alaskensis Nyl. = Herteliana alaskensis
albidocinerella (Vainio) Vainio = Lecidella effugiens
albocaerulescens (Wulfen) Ach. = Porpidia albocaerulescens
albonigra H. Magn. = Lecidella carpathica (Coppins & Fryday 2006b)
albosuffusa Th. Fr. = Farnoldia jurana
aleutica Degel. = Fuscidea aleutica
amabilis B. de Lesd. = Carbonea latypizodes
amaurospoda (Anzi) Vainio = Lecidea pullata
"amylacea Ach. 1810" nom. illeg. Probably refers to Lecanora marginata
aniptiza Stirton = Micarea denigrata
anthracophila Nyl. = Carbonicola anthracophila
antoniensis H. Magn. = L. hassei
apochroeiza Nyl. = Biatora subduplex
arctica Sommerf. = Frutidella caesioatra
arctogena (Th. Fr.) H. Olivier = Calvitimela testaceoatra
arcuatula (Arnold) Nyl. = Fuscidea recensa var. arcuatula
armeniaca (DC.) Fr. = Calvitimela armeniaca
assimilata Nyl. = Micarea assimilata
assimilis (Körber) Th. Fr. = Carbonea assimilis
associata Th. Fr. = Geltingia associata
atrata (Ach.) Wahlenb. = Tremolecia atrata
atrobrunnea subsp. saxosa Hertel & Leuckert (Hertel & Printzen 2004) = L. syncarpa (McCune et al. 2014b)
atrobrunnea subsp. stictica Hertel & Leuckert (Hertel & Printzen 2004) = L. protabacina (McCune et al. 2014b)
atrofulva Sommerf. = Miriquidica atrofulva
atrofusca (Hepp) Mudd = Bryobilimbia hypnorum
atrolutescens Nyl. = L. mannii
atronivea Arnold = Carbonea atronivea
austrocalifornica Zahlbr. = Carbonea latypizodes
berengeriana (A. Massal.) Nyl. (Hertel & Printzen 2004) = Mycobilimbia berengeriana
botryosa (Fr.) Th. Fr. = Hertelidea botryosa
brandegei Tuck. = Lecanora pringlei subsp. brandegei
brouardii (B. de Lesd.) Zahlbr. = Psorula rufonigra
brujeriana (D. Dietr.) Leighton = Ainoa mooreana, but a misidentification for North America
cadubriae (A. Massal.) Nyl. = Lecanora cadubriae
caeca J. Lowe = Lambiella caeca
caesioatra Schaerer = Frutidella caesioatra
caesiocoronata J. Lowe = Lecidea olivascens (Degelius 1957); belongs to Lecanora according to Printzen (1995)
calcivora (Ehrh.) Nyl. = Clauzadea immersa
carbonoidea J. W. Thomson = Immersaria carbonoidea
carpathica (Körber) Szatala = Lecidella carpathica

catalinaria Stizenb. = Lecidella asema
 caudata Nyl. (Fink 1935) = Ropalospora lugubris
 caulophylla (Tuck.) Zahlbr. = a Lecanora sp.
 chalybeiza Nyl. = Leimonis erratica
 cinereoatra Ach. = Porpidia cinereoatra
 cinereorufa Schaerer = Schaereria cinereorufa
 cinnabarina Sommerf. = Ramboldia cinnabarina
 circumnigrata H. Magn. = Miriquidica pulvinata
 circumnigrata var. reagens H. Magn. = Miriquidica lulensis
 coarctata (Turner ex Sm.) Nyl. = Trapelia coarctata
 colludens Nyl. = Rhizocarpon hochstetteri
 columbiana H. Magn. = L. tessellata
 columnata J. Lowe = Cecidonia xenophana
 conferenda Nyl. = Adelolecia kolaensis
 contigua Fr. = Porpidia macrocarpa
 contigua var. convexella (Wainio) Fink (Claassen 1917) = Porpidia macrocarpa
 coroniformis Kremp. = Psora crenata
 crassipes (Th. Fr.) Nyl. = Helocarpon crassipes
 crenata (Taylor) Stizenb. = Psora crenata
 crustulata (Ach.) Sprengel = Porpidia crustulata
 cuprea Sommerf. = Biatora cuprea
 cyanea (Ach.) Rohl. = L. tessellata
 cyanescens Lynge = L. lapicida
 cyathoides (Ach.) Ach. = Fuscidea cyathoides, but a misidentification for North America
 cyrtella Ach. = Lecania cyrtella
 decipiens (Hedwig) Ach. = Psora decipiens
 degelii H. Magn. = Porpidia degelii (Lendemer & Harris 2014c)
 delincta Nyl. = Bryobilimbia ahlesii (Arup 2004, Fryday et al. 2014)
 declinis Tuck. = Catillaria nigroclavata (Ekman 1996)
 demissa (Rutstr.) Ach. = Lecidoma demissum
 deustata Zahlbr. = Miriquidica deusta
 diapensiae Th. Fr. = Bryobilimbia diapensiae
 dicksonii auct. = Tremolecia atrata
 dicksonii (Gmelin) Ach. = nomen dubium
 dilutiuscula Nyl. = Brianaria bauschiana
 diversa J. Lowe = Porpidia contraponenda
 dolodes Nyl. = Schaeraria dolodes
 efflorescens (Hedl.) Erichsen = Biatora efflorescens
 elabens Fr. = Ramboldia elabens
 elaeochroma (Ach.) Ach. = Lecidella elaeochroma
 elata Schaerer = Lecanora marginata
 elegantior H. Magn. = Amygdalaria elegantior
 ementiens Nyl. = Biatora ementiens (Printzen 2014)
 endolitheia Lynge = Lecidella patavina
 enteroleuca auct. = Lecidella spp.
 epiiodiza Nyl. = Schaereria endocyanea
 epixanthoidiza Nyl. nom. rej. prop. = Biatora efflorescens
 erratica Körber = Leimonis erratica
 euphorea (Flörke) Nyl. = Lecidella euphorea
 evansii H. Magn. = Lecidella carpathica
 fissuriseda Poelt = Mycobilimbia fissuriseda
 flavocaerulescens Hornem. = Porpidia flavicunda
 flexuosa (Fr.) Nyl. = Trapeliopsis flexuosa
 friesii Ach. = Xylopsora friesii
 furfuracea Pers. = Phyllopsora furfuracea
 furfurosa Tuck. ex Nyl. = Malmidea furfurosa

furva J. Lowe = *Miriquidica plumbeoatra* (Coppins & Fryday 2006b)
 furvella Nyl. ex Mudd = *Lambiella furvella*
 fusca (Schaerer) Th. Fr. = *Bryobilimbia hypnorum*
 fuscescens Sommerf. = *Lecanora fuscescens*
 fuscoatrina Hertel & Leuckert (Hertel & Printzen 2004) = *L. cascadiensis* (Hutten et al. 2013)
 fuscocinerea Nyl. = *Schaereria fuscocinerea*
 fuscorubens (Nyl.) Nyl. (Fink 1935) = *Clauzadea monticola* (Scholz 2000)
 garovaglioii Schaerer = *Miriquidica garovaglioii*
 gelatinosa Flörke = *Trapeliopsis gelatinosa*
 geophana Nyl. = *Steinia geophana*
 glaucophaea Körber = *Porpidia rugosa* (Fryday 2005)
 glaucopholis Nyl. = *Trapeliopsis glaucopholis*
 glebulosa (Fr.) Clem. = *Trapeliopsis wallrothii*, but misidentifications for North America
 globulosa Flörke = *Biatora globulosa*
 globifera Ach. = *Psora globifera*
 glomerulosa (DC.) Steudel = *Lecidella euphorea*
 goniophila auct. = *Lecidella anomaloides*
 granosa Tuck. = *Bacidia granosa* (Ekman 2014)
 granulata H. Magn. = *Lecidella granulata*
 granulosa (Hoffm.) Ach. = *Trapeliopsis granulosa*
 granulosa var. phyllizans Zahlbr. = *Trapeliopsis glaucopholis*
 gregaria G. Merr. = *Trapelia glebulosa*
 grisella Flörke ex Schaerer = *L. fuscoatra*
 griseoatra (Flotow) Schaerer (Fink 1935) = *Miriquidica griseoatra* (Santesson et al. 2004)
 gyrodes H. Magn. = *Fuscidea recens* var. *arcuatula*
 gyalizella Nyl. = *Gyallecta gyalizella* (Baloch et al. 2013a)
 gyrophoroides Sprengel (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)
 hebescens Nyl. = *Porpidia albocaerulescens* (Lendemer 2004a)
 helvola (Körber) Th. Fr. = *Biatora helvola*
 helvola var. longispora Degel. = *Biatora longispora*
 heppii R. A. Anderson & W. A. Weber = *Lecidella wulfenii*
 homalodes Nyl. = *L. tessellata* Flörke (Hertel 1991)
 humilis J. Lowe = *Miriquidica plumbeoatra*
 humosa (Hoffm.) Nyl. = *Placynthiella uliginosa*
 hypnorum Lib. = *Bryobilimbia hypnorum*
 hypocrita A. Massal. = *Farnoldia hypocrita*
 hypopta Ach. = *Lecanora hypopta*
 icterica (Mont.) Taylor = *Psora icterica*
 impavida Th. Fr. = *Lambiella impavida*
 instrata Nyl. = *Miriquidica instrata*
 insularis Nyl. = *Lambiella insularis*
 internectens Nyl. = *Biatora subduplex*
 intrudens H. Magn. = *Carbonia intrudens* (Dillman et al. 2012)
 intumescens (Flotow) Nyl. = *Lambiella insularis*
 jurana Schaerer = *Farnoldia jurana*
 kochiana Hepp = *Fuscidea kochiana*, but apparently a misidentification for N.A. (Fryday 2008)
 kochiana var. subreagens H. Magn. = *Fuscidea scrupulosa*
 lacus-crateris H. Magn. = *Lecidella stigmatea*
 lapicida var. pantherina Ach. (Hertel & Andreev 2003) = *L. lactea* (Coppins 2002)
 latypea auct. non Ach. = *Lecidella carpathica*
 latypea Ach. = *L. plana*
 latypiza Nyl. = *Lecidella carpathica*
 lepidastra Tuck. = *Buellia lepidastra*
 leptoboloides Nyl. = *L. laboriosa*
 leucophaea (Flörke ex Rabenh.) Nyl. = *Miriquidica leucophaea*
 leucophaeoides Nyl. = *Miriquidica leucophaeoides*

limborina (Nyl.) Lamy = Rimularia limborina
 limitata auct. = Lecidella elaeochroma
 limosa Ach. = Protomicarea limosa
 lithospersa Zahlbr. = Farnoldia hypocrita
 lopadioides (Th. Fr.) Grumann = Ainoa mooreana, but a misidentification for North America
 lowensis H. Magn. = Fuscidea lowensis
 lucida (Ach.) Ach. = Psilolechia lucida
 lugubris Sommerf. = Ropalospora lugubris
 lulensis (Hellbom) Stizenb. = Miriquidica lulensis
 lurida (Ach.) DC. = Romjularia lurida
 luridella Tuck. = Psora luridella
 lynceola Th. Fr. = Micarea lynceola, but a misidentification for N. America (Coppins & Fryday 2006b)
 lynceola auct. N. Am. = Brinaria bauschiana (Coppins & Fryday 2006b)
 lyngaeana Zahlbr. = Adelolecia pilati
 macrocarpa (DC.) Steudel = Porpidia macrocarpa
 macrocarpa var. trullisata (Arnold) Mig. = Porpidia zeoroides
 mamillaria Tuck. (Mohr 1901) Apparent typographical error for L. mamillana
 manni Tuck. (Esslinger & Tucker 2009) Orthographic variant of L. mannii
 marciensis J. Lowe = Miriquidica pycnocarpa (Coppins & Fryday 2006b)
 marginata Schaerer = Lecanora marginata
 marylandensis H. Magn. = Miriquidica leucophaea (Coppins & Fryday 2006b)
 medialis Tuck. ex Nyl. = Bacidia medialis (Ekman 1996)
 meiocarpa Nyl. = Biatora meiocarpa
 meiocarpa var. tacomensis Printzen & Tønsberg = Biatora meiocarpa var. tacomensis
 melancheima Tuck. = Ramboldia elabens
 melinodes (Körber) H. Magn. ex Lynge = Porpidia melinodes
 micacea Körber = Lecidella stigmataea
 michenerii (Tuck.) Identity uncertain (Esslinger & Tucker 2009)
 minuta (Nyl.) Nyl. = Biatora meiocarpa
 misella (Nyl.) Nyl. = Micarea misella
 mollis (Wahlenb.) Nyl. = Fuscidea mollis
 monticola Ach. = Clauzadea monticola
 mundula Müll. Arg. = Lecanora oreinodes (Rambold 1989)
 myriocarpella (G. Merr.) Zahlbr., nom. illeg., probable synonym of Lecidea enalla (Printzen 1995)
 myriocarpoides Nyl. = L. plebeja
 neglecta Nyl. (Fink 1935) = Lepraria neglecta
 nemoralis J. Lowe = Bryobilimbia ahlesii var. nemoralis
 nivalis Anzi = Farnoldia micropsis
 novomexicana (B. de Lesd.) W. A. Weber ex R. A. Anderson = Psora nipponica
 oblongula H. Magn. = Caloplaca oblongula
 obtegens Th. Fr. = Trapelia obtegens
 occidentalis Lynge = L. tessellata (Hertel 1991)
 ochrococca Nyl. = Protoparmelia ochrococca
 ochrophora Nyl. = Piccolia ochrophora
 oligotropha J. R. Laundon = Placynthiella oligotropha
 olivacea (Hoffm.) A. Massal. = Lecidella elaeochroma
 oreinodes (Körber) W. A. Weber & Hertel = Lecanora oreinoides
 ornata (Sommerf.) Hue = Trapelia glebulosa
 orosthea (Ach.) Ach. = Lecanora orosthea
 ostreata (Hoffm.) Schaerer = Hypocenomyce scalaris
 *oxyspora (Tul.) Nyl. = Phacopsis oxyspora
 paddensis (Tuck.) Zahlbr. = Lecanora paddensis (McCune et al. 2014b)
 pallida Th. Fr. = Pilophorus dovrensis
 panaeola (Ach.) Ach. = Amygdalaria panaeola
 pantherina (Ach.) Th. Fr. = L. lactea
 parasema (Ach.) Ach. (Fink 1935) = Lecidella elaeochroma (Scholz 2000)

parasemella Nyl. = *Schaereria parasemella*
 parvifolia Pers. = *Phyllopsora parvifolia*
 "pelobotrion" = *Amygdalaria pelobotryon*
 pelobotrya (Wahlenb.) Leighton = *Amygdalaria pelobotryon*
 petri (Tuck.) Zahlbr. = *Romjularia lurida*
 phaeophora Stizenb. = *Lecanora phaeophora*
 phylliscina Nyl. = *Porpidia macrocarpa*
 pilati (Hepp) Körber = *Adelolecia pilati*
 placidensis H. Magn. = *Lecanora placidensis*
 planetica Tuck. ex Willey = *Leimonis erratica*
 platycarpa Ach. = *Porpidia macrocarpa*
 plumbeoatra Vainio = *Miriquidica plumbeoatra*
 polycarpa Flörke (Fink 1935) = *L. lapicida* (Santesson et al. 2004)
 porphyrospoda (Anzi) Th. Fr. = *Myochroidea porphyrospoda*
 praeruptorum Du Rietz & H. Magn. = *Fuscidea praeruptorum*
 prasinula (Wedd.) B. de Lesd. = *Lecidella scabra*
 pringlei Tuck. = *Lecanora pringlei*
 pruinosa Ach. = *L. lithophila*
 pulcherrima Vainio = *Anamylopsora pulcherrima*
 pullata (Norman) Th. Fr. (Jørgensen et al. 2002) = *Frutidella pullata*
 pullula (Tuck.) Zahlbr. = *Lecanora anopta*
 punctella (Willey) Zahlbr. = *Micarea rhabdogena*
 purissima Darb. = *Lecanora marginata*
 pycnocarpa (Körber) Ohlert = *Miriquidica pycnocarpa*
 quadricolor (Dickson) Borrer = *Trapeliopsis granulosa*
 querneae (Dickson) Ach. = *Pyrrhospora querneae*
 ramulicola H. Magn. = *Lecanora cadubriae*
 recedens Nyl. = a non-lichenized fungus
 recensa Stirton = *Fuscidea recensa*
 rhaetica Hepp ex Th. Fr. = *Farnoldia micropsis*
 rivulosa Ach. = *Fuscidea cyathoides*, but a misidentification for North America
 rubiformis (Ach.) Wahlenb. = *Psora rubiformis*
 rufofusca (Anzi) Nyl. = *Myochroidea rufofusca*
 rufonigra (Tuck.) Nyl. = *Psorula rufonigra*
 rugosa J. Lowe = *Schaereria cinereorufa* (Coppins & Fryday 2006b)
 russellii Tuck. = *Psora russellii*
 russula Ach. = *Ramboldia russula*
 sanguineoatra sens. Nyl. = *Bryobilimbia hypnorum*
 santae-monicae H. Magn. = *L. laboriosa* (Knudsen & Lendemer 2005a)
 santensis Tuck. = *Phyllopsora santensis*
 saxosa R. A. Anderson = *L. syncarpa* (Hertel 1995, Leuckert & Hertel 2003)
 scabra Taylor = *Lecidella scabra*
 scalaris (Ach. ex Lilj.) Ach. = *Hypocenomyce scalaris*
 schizopeltica Hertel & Leuckert (Hertel & Printzen 2004, Hertel & Leuckert 2011) = *L. truckeei* (Lendemer & Knudsen 2007)
 scholanderi Lynge = *Toninia tristis* subsp. *scholanderi*
 scotopholis (Tuck.) Herre = *Miriquidica scotopholis*
 scrobiculata Th. Fr. = *Lecanora scrobiculata* (Elix & Øvstedal 2004)
 scrupulosa (Eckfeldt) H. Magn. = *Fuscidea scrupulosa*
 shushanii J. W. Thomson = *Lecidea aglaeida* (Haugan & Timdal 1994) = *Calvitimela aglaea* (Hertel & Andreev 2003)
 soledifera J. Lowe = *Porpidia macrocarpa* (Coppins & Fryday 2006b)
 solediza Nyl. = *Porpidia tuberculosa*
 soledizodes (Lamy ex Nyl.) Vainio = *Porpidia soledizodes*
 speirea (Ach.) Ach. = *Porpidia speirea*
 sphacelata Th. Fr. = *Lambiella sphacelata*

stenotera (Nyl.) Nyl. = *L. alpestris*
 steriza (Ach.) Vainio = *Porpidia macrocarpa*
 stigmatea Ach. = *Lecidella stigmatea*
 suballinita Nyl. = *Micarea ternaria* (Nyl.) Vězda (Printzen 1995)
 subauriculata B. de Lesd. non Lynge = *Lecidella* spp.
 subauriculata Lynge non B. de Lesd. = *Adelolecia pilati*
 subcinnabarina Tønsberg = *Pyrrhospora subcinnabarina*
 subcontinuior B. de Lesd. = *Carbonea latypizodes*
 subduplex (Nyl.) Nyl. = *Biatora subduplex*
 suberratica J. Lowe = *Micarea erratica*
 sublimosa Nyl. = *Megalaria jemtlandica*
 subplebeia Nyl. = *Carbonea latypizodes*
 subplebeja Vainio This name (a corticolous Brazilian taxon) was first added to the North American checklist in the 1960 Hale & Culberson version, apparently erroneously replacing *L. subplebeia* Nyl. (a saxicolous California taxon) which had been in the 1956 version.
 subplumbea Anzi = (?) *Miriquidica griseoatra*
 subramosa J. Lowe = *Toninia squalecens* (Coppins & Fryday 2006b)
 subsimplex H. Magn. = *Porpidia subsimplex*
 subsorediza Lynge = *Bellemerea subsorediza*
 subtilis Degel. = *Lecidea varians* (Lendemer & Harris 2014c)
 sulphurea (Hoffm.) Wahlenb. = *Lecanora sulphurea*
 sylvana (Körber) Th. Fr. = *Biatoraa globulosa*
 sylvicola Flotow = *Brianaria sylvicola*
 symmicta (Ach.) Ach. = *Lecanora symmicta*
 symmictella Nyl. (Spribille & Björk 2008) = *Puttea caesia* (Dillman et al. 2012)
 templetonii Taylor = *Bryobilimbia hypnorum*
 tenebrosa Flotow = *Schaereria fuscocinerea*
 tennesseensis Nyl. = *Lecanora oreinoides*
 tessalina Tuck. = *Lecanora oreinoides*
 testacea (Hoffm.) Ach. = *Psora testacea* Not included in the North American flora.
 texana W. A. Weber = *Xanthopsorella texana*
 tornoënsis Nyl. = *Japewia tornoënsis*
 trochodes (Taylor ex Leighton) Crombie = *Rimularia limborina*
 tuckeii Herre (Fink 1935) Apparent typographic error for *L. truckeei*
 tumida A. Massal. = *Porpidia tuberculosa*
 uliginosa (Schrader) Ach. = *Placynthiella uliginosa*
 ultima Th. Fr. = *Cephalophysia leucospila*
 umbonella Nyl. = *Cecidonia umbonella*
 vacciniicola Tønsberg = *Biatora vacciniicola*
 vernalis (L.) Ach. = *Biatora vernalis*
 vernicoma Tuck. = *Gassicurtia vernicoma*
 violascens H. Magn. = *L. laboriosa* (Knudsen & Lendemer 2005a)
 viridans (Flotow) Lamy = *Lecidella viridans*
 viridescens (Schrader) Ach. = *Trapeliopsis viridescens*
 *vitellinaria Nyl. = *Carbonea vitellinaria*
 vorticosa (Flörke) Körber = *Carbonea vorticosa*
 vulgata Zahlbr. = *Lecidella stigmatea*
 wallrothii Flörke ex Sprengel = *Trapeliopsis wallrothii*, but misidentifications for North America
 washingtonensis H. Magn. = *L. cascadiensis*
 wulfenii (Hepp) Arnold = *Lecidella wulfenii*
 xanthococca Sommerf. = *Pycnora xanthococca*
 ypocrita A. Massal. = *Farnoldia hypocrita*
 zahlbruckneri Fink = *Lecidella latypiza* (Knoph & Leuckert 1994)

LECIDELLA Körber

anomaloides (A. Massal.) Hertel & H. Kiliyas Syn.: *Lecidea goniophila* auct.

asema (Nyl.) Knoph & Hertel Syn.: *Lecidea catalinaria*
bullata Körber
carpathica Körber Syns.: *Lecidea latypiza*, *L. carpathica*, *L. latypea* auct., *L. evansi*, *L. albonigra*
chiricahuana Knoph & Leuckert (Knoph & Leuckert 2004)
dimelaenophila Hertel
effugiens (Nilson) Knoph & Hertel Syn.: *Lecidea albidocinerella*
elaeochroma (Ach.) M. Choisy Syns.: *Lecidea elaeochroma*, *L. olivacea*, *L. limitata* auct.
enteroleucella (Nyl.) Hertel
euphorea (Flörke) Hertel Syns.: *Lecidea euphorea*, *L. glomerulosa*
flavosorediata (Vězda) Hertel & Leuckert
granulata (H. Magn.) R. C. Harris Syn.: *Lecidea granulata*
granulosula (Nyl.) Knoph & Leuckert (Knoph & Leuckert 2004)
latypiza (Nyl.) M. Choisy
laureri (Hepp ex Th. Fr.) Körber (Goward et al. 1996)
meiococca (Nyl.) Leuckert & Hertel
nashiana Knoph & Leuckert (Knoph & Leuckert 2004)
patavina (A. Massal.) Knoph & Leuckert Syns.: *Lecidea acrocyanea*, *L. alaiensis*, *L. endolitheia*
pulveracea (Flörke ex Th. Fr.) P. Sydow (Laundon 2005)
scabra (Taylor) Hertel & Leuckert Syns.: *Lecidea scabra*, *L. prasinula*
stigmatea (Ach.) Hertel & Leuckert Syns.: *Bacidia arthoniza*, *Lecidea micacea*, *L. stigmatea*, *L. vulgata*, *L. lacus-crateris*
[Lecidea subauriculata B. de Lesd. non Lynge]
subviridis Tønsberg (Coppins & Fryday 2006b)
tumidula (A. Massal.) Knoph & Leuckert (Knoph & Leuckert 2004)
viridans (Flotow) Körber Syn.: *Lecidea viridans*
wulfenii (Hepp) Körber Syns.: *Lecidea heppii*, *L. wulfenii*
alaiensis (Vainio) Hertel = *L. patavina*
chodatii (Samp.) Knoph & Leuckert = *L. granulosula*
elaeochromoides (Nyl.) Knoph & Hertel = *L. asema*
enteroleuca auct. = various *Lecidella* spp.
glomerulosa (DC.) M. Choisy = *L. euphorea*
goniophila auct. = *L. anomaloides*
inamoena (Müll. Arg.) Hertel = *L. patavina*
incongruella (Vainio) Hertel & Leuckert = *L. effugiens placidensis* (H. Magn.) R. C. Harris = *Lecanora placidensis* (Knoph & Leuckert 1994)
prasinula (Wedd.) Hertel = *L. scabra*
spitsbergensis (Lynge) Hertel & Leuckert = *L. patavina*
subincongrua (Nyl.) Hertel & Leuckert var. *elaeochromoides* (Nyl.) Hertel & Leuckert = *L. asema*

LECIDOMA Gotth. Schneider & Hertel

demissum (Rutstr.) Gotth. Schneider & Hertel Syns.: *Lecidea demissa*, *Lepidoma demissum*, *Psora demissa*

LECIOGRAPHA A. Massal. = **OPEGRAPHA**

**glaucomaria* (Nyl.) H. Olivier = *Phacographa glaucomaria*
 **glaucomarioidea* (Willey) Fink (Fink 1935) = *Dactylospora glaucomarioides*
 **inspersa* (Tul.) Rehm = possibly *Dactylospora parasitica*
 **lamyi* (O. J. Rich. ex Nyl.) Sacc. & D. Sacc. = *Opegrapha lamyi*
 **parasitica* A. Massal. = *Opegrapha rupestris*
 **pertusariicola* (Willey ex Tuck.) Fink = *Dactylospora pertusariicola*
 **f* (Fr.) Körber = *Dactylospora urceolata*

LECIOPHYSMA Th. Fr.

finmarkicum Th. Fr.
furfurascens (Nyl.) Gyelnik

saximontana (T. Sprib., P. M. Jørg. & M. Schultz) P. M. Jørg., Wedin & S. Ekman Syn.: Santessoniella saximontana (Ekman et al. 2014)

LEIGHTONIOMYCES D. Hawksw. & B. Sutton

#**phillipsii** (Berk. & Leighton) D. Hawksw. & B. Sutton (McCune & Stone 2009)

LEIODERMA Nyl.

cherokeense P. M. Jørg. (Jørgensen & Tønsberg 2005)

sorediatum D. J. Galloway & P. M. Jørg.

LEIMONIS R. C. Harris (Harris 2009)

erratica (Körber) R. C. Harris & Lendemer Syns.: Lecidea chalybeiformis, L. erratica, L. suberratica, Micarea erratica

LEIORREUMA Eschw.

exaltatum (Mont. & Bosch) Staiger Syn.: Graphis diversa, Phaeographis exaltata (Staiger 2002)

explicans (Fink) Lendemer Syn.: Phaeographina explicans (Lendemer & Knudsen 2008b)

patellulum (Fée) Staiger Syn.: Phaeographis patellula (Esslinger & Tucker 2009)

sericeum (Eschw.) Staiger Syn.: Phaeographis sericea (Staiger 2002)

LEMMOPSIS (Vainio) Zahlbr.

arnoldiana (Hepp) Zahlbr. (Schultz 2002d)

LEMPHOLEMMA Körber

chalazanum (Ach.) B. de Lesd. Syn.: Psorotichia segregata, Collemopsis segregata (Schultz 2007b)

cladodes (Tuck.) Zahlbr.

intricatum (Arnold) Zahlbr.

isidiodes (Nyl. ex Arnold) H. Magn.

oblique-peltatum (Eschw.) C. W. Dodge

polyanthes (Bernh.) Malme Syn.: Collema myriococcum

radiatum (Sommerf.) Henssen

umbella (Tuck.) Zahlbr. Syn.: Omphalaria umbella

vesiculiferum Henssen

albonigrum H. Magn. = L. cladodes

fennicum (Räsänen) Degel. (Goward 1999) = L. intricatum

myriococcum (Ach.) Th. Fr. = L. polyanthes

LEPIDOCOLLEMA Vainio

marianum (Fr.) P. M. Jørg. Syns.: Pannaria mariana, Parmeliella mariana (Ekman et al. 2014)

Uncertain for North America (Jørgensen 2000c)

stylophorum (Vainio) P. M. Jørg. Syns.: Pannaria stylophora, Parmeliella stylophorum (Ekman et al. 2014)

LEPIDOMA (Ach.) Gray

demissum (Rutstr.) M. Choisy = Lecidoma demissum

LEPRARIA Ach.

albicans (Th. Fr.) Lendemer & Hodkinson Syns.: Leprocaulon albicans, Stereocaulon albicans (Lendemer & Hodkinson 2013)

arbuscula (Nyl.) Lendemer & Hodkinson Syns.: Leprocaulon arbuscula, Stereocaulon arbuscula (Lendemer & Hodkinson 2013)

aurescens Orange & Wolseley (Lendemer 2010a)

barbatica Lendemer (Lendemer 2010a)

brodoi Lendemer & Tønsberg (Lendemer & Tønsberg 2014)

caesiella R. C. Harris (Lendemer 2005a)

cryophila Lendemer (Lendemer 2010a)

diffusa (J. R. Laundon) Kukwa Syn.: *Leproloma diffusum* (Kukwa 2002)
disjuncta Lendemer (Lendemer 2010a)
eburnea J. R. Laundon
elobata Tønsberg (Tønsberg 1997)
finkii (B. de Lesd.) R. C. Harris (Lendemer 2013b) Syns: *Crocynia aliciae*, *C. americana*
friabilis Lendemer, K. Knudsen & Elix (Lendemer et al. 2008b)
gracilescens (Nyl.) Lendemer & Hodkinson Syn.: *Leprocaulon gracilescens* (Lendemer & Hodkinson 2013)
harrisiana Lendemer (Lendemer 2012a)
hodkinsoniana Lendemer (Lendemer 2011b)
humida Slav.-Bayr. & Orange (Lendemer 2013a, 2013b)
jackii Tønsberg (Kümmerling et al. 1995)
lanata Tønsberg (Tønsberg 2007)
lecanorica Tønsberg (Tønsberg 2004b)
leprolomopsis Diederich & Sérus. (Lendemer 2013b)
membranacea (Dickson) Vainio Syn.: *Leproloma membranaceum*, *Amphiloma lanuginosum* (Kukwa 2002)
neglecta (Nyl.) Erichsen Syn.: *Crocynia neglecta*
nivalis J. R. Laundon
normandinoides Lendemer & R. C. Harris (Lendemer & Harris 2007)
oxybapha Lendemer (Lendemer 2012b)
pacifica Lendemer (Lendemer 2011b)
rigidula (B. de Lesd.) Tønsberg
squamatica Elix (Lendemer 2008)
subalbicans (I. M. Lamb) Lendemer & Hodkinson Syns.: *Leprocaulon subalbicans*, *Stereocaulon subalbicans* (Lendemer & Hodkinson 2013)
torii Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009a)
vouauxii (Hue) R. C. Harris Syn.: *Leproloma vouauxii* (Kukwa 2002)
xanthonica Lendemer (Lendemer 2010a)
xerophila Tønsberg (Tønsberg 2004b)
adhaerens K. Knudsen, Elix & Lendemer (Knudsen et al. 2007) = *Leprocaulon adhaerens*
aeruginosa auct. = misidentification for North America
aeruginosa (Weiss) Sm. = not a lichen-forming fungus
alpina (B. de Lesd.) Tretiach & Baruffo (Knudsen & Elix 2007a) = *L. neglecta* (Lendemer 2013a, 2013b)
arctica (Lynge) Wetmore = *L. vouauxii*
borealis Loht. & Tønsberg = *L. neglecta* (Lendemer 2013b)
cacuminum sensu J. R. Laundon = *L. neglecta* (Lendemer 2013a, 2013b)
cacuminum sensu Loht. = *L. neglecta* (Lendemer 2013a, 2013b)
caesioalba (B. de Lesd.) J. R. Laundon = *L. neglecta* (Lendemer 2013a, 2013b)
candelaris (L.) Fr. = *Chrysothrix candelaris*
chlorina (Ach.) Ach. = *Chrysothrix chlorina*
citrina (Schaerer) Rabenh. = *Chrysothrix candelaris*
crassissima (Hue) Lettau = misidentification for North America (Lendemer 2011b)
crassissima var. *isidiata* Llimona = misidentification for North America (Lendemer 2011b)
diffusa (J. R. Laundon) Kukwa var. *chrysodetoides* (J. R. Laundon) Kukwa = *L. diffusa* (Lendemer 2013a, 2013b)
flava (Schreber) Sm. = *Chrysothrix candelaris*
frigida J. R. Laundon = *L. eburnea* (Tønsberg 2004b)
gelida Tønsberg & Zhurb. (Kukwa & Zhurbenko 2010) = *Lepraria neglecta* (Lendemer 2013b)
incana (L.) Ach. = misidentification for North America (Lendemer 2011b)
lesdainii (Hue) R. C. Harris = *Botryolepraria lesdainii*
lobificans auct. N.A. non Nyl. = *L. finkii* (Lendemer 2013b)
moroiziana Lendemer (Lendemer 2010a) = *Andreimyces morozianus*
salazinica Tønsberg (Tønsberg 2007) = *L. elobata* (Lendemer 2013a, 2013b)
santamonicae K. Knudsen & Elix (Knudsen & Elix 2007b) = *Leprocaulon santamonicae*

terricola Lendemer (Lendemer 2010a) = Leprocaulon terricola
texta K. Knudsen, Elix & Lendemer (Knudsen & Elix 2007a) = Leprocaulon textum
zonata Brodo = L. neglecta

LEPROCAULON Nyl. ex Lamy

adhaerens (K. Knudsen, Elix & Lendemer) Lendemer & Hodkinson Syn.: Lepraria adhaerens (Lendemer & Hodkinson 2013)
americanum Lendemer & Hodkinson (Lendemer & Hodkinson 2013)
knudsenii Lendemer & Hodkinson (Lendemer & Hodkinson 2013)
santamonicae (K. Knudsen & Elix) Lendemer & Hodkinson Syn.: Lepraria santamonicae (Lendemer & Hodkinson 2013)
terricola (Lendemer) Lendemer & Hodkinson Syn.: Lepraria terricola (Lendemer & Hodkinson 2013)
textum (K. Knudsen, Elix & Lendemer) Lendemer & Hodkinson Syn.: Lepraria texta (Lendemer & Hodkinson 2013)
albicans (Th. Fr.) Nyl. = Lepraria albicans
arbuscula (Nyl.) Nyl. = Lepraria arbuscula
gracilescens (Nyl.) I. M. Lamb & A. Ward = Lepraria gracilescens
microscopicum (Vill.) Gams ex D. Hawksw. = L. quisquiliare, but North American records are L. americanum (Lendemer & Hodkinson 2013)
pseudoarbuscula (Asahina) I. M. Lamb & A. Ward = Lepraria subalbicans for North American records
quisquiliare (Leers) M. Choisy = misidentification for North America
subalbicans (I. M. Lamb) I. M. Lamb & A. Ward = Lepraria subalbicans

LEPROCOLLEMA Vainio

americanum Vainio Apparently absent from N.A. north of Mexico (Schultz 2007a)

LEPROLOMA Nyl. ex Crombie = LEPRARIA (Kukwa 2002)

angardianum (Øvstedal) J. R. Laundon = Lepraria neglecta
cacuminum (A. Massal.) J. R. Laundon = Lepraria neglecta
diffusum J. R. Laundon var. diffusum = Lepraria diffusa
diffusum J. R. Laundon var. chrysodetoides J. R. Laundon (Goward et al. 1996) = Lepraria diffusa
membranaceum (Dickson) Vainio = Lepraria membranacea
"membranaceum var. chrysodetoides" Removed as a typographical error here
vouauxii (Hue) J. R. Laundon = Lepraria vouauxii

LEPROPLACA (Nyl.) Hue (Arup et al. 2013)

cirrochroa (Ach.) Arup, Frödén & Söchting Syn.: Caloplaca cirrochroa
chrysodeta (Vainio) J. R. Laundon ex Ahti Syn.: Caloplaca chrysodeta
obliterans (Nyl.) Arup, Frödén & Söchting Syn.: Caloplaca obliterans

LEPTOCHIDIUM M. Choisy

albociliatum (Desm.) M. Choisy Syn.: Polychidium albociliatum, Leptogium albociliatum, L. pilosellum
crenatulum (Nyl.) P. M. Jørg. (Jørgensen 2006)

LEPTOGIDIUM Nyl. (Muggia et al. 2011)

contortum (Henssen) T. Sprib. & Muggia (Muggia et al. 2011)
dendriscum (Nyl.) Nyl. Syn.: Polychidium dendriscum
intricatum Nyl. = Dendriscocaulon intricatum

LEPTOGIUM (Ach.) Gray

acadiense J. W. Hinds, F. L. Anderson & Lendemer (Stone et al. 2016)
adpressum Nyl.
arcticum P. M. Jørg.
arsenei Sierk
austroamericanum (Malme) C. W. Dodge

azureum (Sw. ex Ach.) Mont.
brebissonii Mont.
burgessii (L.) Mont.
byssinum (Hoffm.) Zwackh ex Nyl.
chloromelum (Ach.) Nyl.
compactum D. F. Stone, F. L. Anderson & J. W. Hinds (Stone et al. 2016)
cookii D. F. Stone & Lendemer (Stone et al. 2016)
coralloideum (Meyen & Flotow) Vainio (Jørgensen & Nash 2004) Syn.: *Parmelia coralloideum*
corticola (Taylor) Tuck.
crenatulum (Nyl.) Vainio
cyanescens (Rabenh.) Körber
digitatum (A. Massal.) Zahlbr.
floridanum Sierk
fusisporum (Tuck.) C. W. Dodge
hibernicum M. E. Mitch. ex P. M. Jørg. (Nealy & Anderson 2010)
hirsutum Sierk
hypotrachynum Müll. Arg.
insigne P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 2010)
isidiosellum (Riddle) Sierk
joergensenii Marcelli & Kitauro (Kitauro et al. 2015)
juessianum Tav. (Lendemer et al. 2008c)
laceroides B. de Lesd.
marginellum (Sw.) Gray
microstictum Vainio
milligranum Sierk
nanum Herre (McCune & Rosentreter 2007)
papillosum (B. de Lesd.) C. W. Dodge (Jørgensen & Nash 2004)
phyllocarpum (Pers.) Mont.
pseudofurfuraceum P. M. Jørg. & Wallace (Jørgensen 1997)
resupinans Nyl. (Jørgensen & Nash 2004)
rivulare (Ach.) Mont.
rugosum Sierk
saturninum (Dickson) Nyl.
sessile Vainio
stipitatum Vainio
albociliatum Desm. = *Leptochidium albociliatum*
americanum Degel. = *L. laceroides*
amphineum Ach. ex Nyl. = *L. byssinum*
apalachense (Tuck.) Nyl. = *Scytinium apalachense* (Otálora et al. 2014)
aquale (Arnold) P. M. Jørg. (Jørgensen & Tønsberg 1999) = *Scytinium aquale* (Otálora et al. 2014)
aragonii Otálora (Otálora et al. 2008) = *Scytinium aragonii* (Otálora et al. 2014)
arizonicum Zahlbr. = *Scytinium juniperinum*
biatorinum (Nyl.) Leighton (Jørgensen & Tønsberg 1999) = *L. nanum*, for North American report (McCune & Rosentreter 2007)
bullatum (Sw. in Ach.) Nyl. (Fink 1935) Probable misidentification for North America (Esslinger & Tucker 2009)
burnetiae C. W. Dodge Misidentifications for North America (Stone et al. 2016)
burnetiae C. W. Dodge var. **hirsutum** (Sierk) P. M. Jørg. = *L. hirsutum*
caesiellum Tuck. = *L. byssinum*
caesium (Ach.) Vainio = *L. cyanescens*
californicum Tuck. = *Scytinium californicum* (Otálora et al. 2014)
cellulosum P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 1999) = *Scytinium cellulosum* (Otálora et al. 2014)
contortum Sierk = *Scytinium contortum* (Otálora et al. 2014)
corniculatum (Hoffm.) Minks = *Scytinium palmatum* (Otálora et al. 2014)
crenatellum (Nyl.) Tuck. = *L. rivulare*

dactylinum Tuck. = *Scytinium dactylinum* (Otálora et al. 2014)
denticulatum Nyl. = misidentification for North America (Kitaura et al. 2015)
denticulatum sensu Sierk (1964) = *L. joergensenii* (Kitaura et al. 2015)
erectum Sierk = *Scytinium erectum* (Otálora et al. 2014)
fragile (Tayl.) Nyl (Fink 1935) = *Scytinium fragile* Taylor, but a likely misidentification for North America (Degelius 1954)
furfuraceum (Harm.) Sierk = *L. pseudofurfuraceum* (for North American reports; Jørgensen 1997)
gelatinosum (With.) J. R. Laundon = *Scytinium gelatinosum* (Otálora et al. 2014)
hildenbrandii (Garov.) Nyl. = a European species, a misidentification for North America (Sierk 1964)
imbricatum P. M. Jørg. = *Scytinium imbricatum* (Otálora et al. 2014)
inflexum Nyl. = *L. burgessii* (fide Jørgensen)
intermedium (Arnold) Arnold = *Scytinium intermedium* (Otálora et al. 2014)
intricatum Nyl. (Fink 1935) = *Scytinium teretiusculum* (Sierk 1964)
juniperinum Tuck. = *Scytinium juniperinum* (Otálora et al. 2014)
lacerum (Sw.) Gray = *Scytinium lichenoides*
lichenoides (L.) Zahlbr. = *Scytinium lichenoides* (Otálora et al. 2014)
lividofuscum (Florke ex Schlecht.) Flotow = *Scytinium tenuissimum*
microdium (Nyl.) Zahlbr. = *Scytinium plicatile* (Sierk 1964)
minutissimum (Flörke) Fr. = *Scytinium subtile*
minutissimum auct. = *Scytinium intermedium*
muscicola (Sw.) Fr. = *Polychidium muscicola*
palmatum (Hudson) Mont. (Hoffman & Hafellner 2000; Santesson et al. 2004) = *Scytinium palmatum* (Otálora et al. 2014)
papillosum (B. de Lesd.) C. W. Dodge North American reports refer to *L. pseudofurfuraceum*
parculum Nyl. = *Scytinium parculum* (Otálora et al. 2014)
perminutum Hedr. = *Scytinium subtile*
pilosellum G. Merr. = *Leptochidium albociliatum*
platynum (Tuck.) Herre = *Scytinium platynum* (Otálora et al. 2014)
plectenchymum Fink = *Scytinium juniperinum*
plicatile (Ach.) Leighton = *Scytinium plicatile* (Otálora et al. 2014)
polycarpum P. M. Jørg. & Goward = *Scytinium polycarpum* (Otálora et al. 2014)
pulchellum (Ach.) Nyl. = *Collema pulchellum*
pulvillus Tuck. (Fink 1935) Possible synonym of *Scytinium lichenoides* (Sierk 1964)
rhyparodes Nyl. (Fink 1935) = *Scytinium callopismum*
rivale Tuck. = *Scytinium rivale* (Otálora et al. 2014)
schraderi (Bernh.) Nyl. = *Scytinium schraderi* (Otálora et al. 2014)
scotinum (Ach.) Fr. = *Scytinium gelatinosum* (Santesson et al. 2004)
sinuatum (Hudson) A. Massal. = *Scytinium gelatinosum*
siskiyouensis D. F. Stone & Ruchty (Stone & Ruchty 2008) = *Scytinium siskiyouensis* (Otálora et al. 2014)
subaridum P. M. Jørg. & Goward = *Scytinium subaridum* (Otálora et al. 2014)
subtile (Schrader) Torss. = *Scytinium subtile* (Otálora et al. 2014)
tacomae P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 1999) = *Scytinium tacomae* (McCune et al. 2014b)
tenuissimum (Dickson) Körber = *Scytinium tenuissimum* (Otálora et al. 2014)
teretiusculum (Wallr.) Arnold = *Scytinium teretiusculum* (Otálora et al. 2014)
tremelloides auct. = *L. cyanescens*
turgidum (Ach.) Crombie (McCune & Rosentreter 2007) = *Scytinium turgidum* (Otálora et al. 2014)

LEPTORHAPHIS Körber

atomaria (Ach.) Szatala
 #**contorta** Degel.
 #**epidermidis** (Ach.) Th. Fr.
lucida Körber
 +**parameca** (A. Massal.) Körber
quercus (Beltr.) Körber = identity uncertain

LEPTOSPHAERULINA McAlpine

***peltigerae** (Fuckel) Riedel

LEPTOTREMA Mont. & Bosch (Frisch 2006)

aubertianum (Mont.) Fink = *Stegobolus aubertianus*
glaucescens (Nyl.) Müll. Arg. = *Leucodecton glaucescens*
heterosporum (C. Knight ex F. M. Bailey) Zahlbr. = *Thelotrema santense*
laeviusculum (Nyl.) Zahlbr. = *Myriotrema laeviusculum*
lepadodes (Tuck.) Zahlbr. = *Thelotrema monosporum*
monosporum (Nyl.) Müll. Arg. = *Thelotrema monosporum*
obturascens (Nyl.) Hale = *Ocellularia bahiana*
polycarpum Müll. Arg. = *Leucodecton subcompunctum*
ravenelii (Tuck.) Fink = *Sanguinotrema wightii*
reclusum (Kremp.) Zahlbr. = *Myriotrema reclusum*
santense (Tuck.) Zahlbr. = *Reimnitzia santensis*
wightii (Taylor) Müll. Arg. (Frisch 2006) = *Sanguinotrema wightii* (Lücking et al. 2015)

LETHARIA (Th. Fr.) Zahlbr.

columbiana (Nutt.) J. W. Thomson
gracilis Krokken ex McCune & Altermann (McCune & Altermann 2009)
lupina Altermann, Leavitt & Goward (Altermann et al. 2016)
vulpina (L.) Hue Syn.: *Evernia vulpina*
californica (Lév.) Hue = *L. columbiana*
vulpina (L.) Hue f. *californica* (Lév.) W. A. Weber = *L. columbiana*

LETHARIICOLA Grumann = SPHAEROPEZIA (Baloch et al. 2013b)

***cucularis** (Norman) Lumbsch & D. Hawksw. = *Sphaeropezia cucularis*
***sipei** Grumann = *Sphaeropezia sipei*

LETROUITIA Hafellner & Bellem.

domingensis (Pers.) Hafellner & Bellem. Syn.: *Bombyliospora domingensis*, *Lopadium domingense*, *Heterothecium domingense*
parabola (Nyl.) R. Sant. & Hafellner
vulpina (Tuck.) Hafellner & Bellem. Syn.: *Lopadium vulpinum*, *Bombyliospora vulpina*

LETTAUIA D. Hawksw. & R. Sant.

***cladoniicola** D. Hawksw. & R. Sant. (Esslinger & Egan 1995)
***santessonii** Ihlen & Tønsberg (Ihlen & Tønsberg 1996)

LEUCOCARPIA Vězda

biatorella (Arnold) Vězda (Buck & Harris 2001)
dictyospora (Orange) R. Sant. (Alstrup 2004)

LEUCODECTON Massal. (Frisch 2006)

compunctellum (Nyl.) Frisch (Lücking et al. 2011b)
glaucescens (Nyl.) A. Frisch Syn: *Leptotrema glaucescens*, *Myriotrema glaucescens*, *Thelotrema glaucescens* (Frisch 2006)
occultum (Eschw.) A. Frisch Syn: *Myriotrema compunctum* (Frisch 2006)
phaeosporum (Nyl.) Rivas Plata & Lücking (Seavey et al. 2014)
subcompunctum (Nyl.) A. Frisch Syn: *Leptotrema polycarpum* (Frisch 2006), *Myriotrema subcompunctum*
willei (Nyl.) R. C. Harris Syn.: *Phlyctis willei* (Lendemer & Harris 2014d)

LEUCOGYROPHANA Pouzar

***lichenicola** Thorn, Malloch & Ginns (Thorn et al. 1998)

LICHENOBARYA Etayo, Diederich & Lawrey (Lawrey et al. 2015)

***usneae** (Etayo) Etayo, Diederich & Lawrey (Lawrey et al. 2015)

LICHENOCHORA Hafellner

- ***arctica** Zhurb. (Zhurbenko 2013)
- ***galligena** R. Sant. & Hafellner (Diederich 2003)
- ***lepidiotae** (Anzi) Etayo & Nav.-Ros. (Zhurbenko 2013)
- ***obscuroides** (Lindsay) Triebel & Rambold (Hoffmann & Hafellner 2000)
- ***rinodinae** Zhurb. (Zhurbenko 2013)
- ***verrucicola** (Wedd.) Nik. Hoffm. & Hafellner (Hoffmann & Hafellner 2000)
- ***weillii** (Werner) Hafellner & R. Sant.
- ***xanthoriae** Triebel & Rambold
- ***thallina** (Cooke) Hafellner = *L. obscuroides*

LICHENOCONIUM Petrak & H. Sydow

- ***cargillianum** (Lindsay) D. Hawksw. (Diederich 2003)
- ***christiansenii** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2004)
- ***edgewoodensis** Alstrup & M. S. Cole (Alstrup & Cole 1998)
- ***erodens** M. S. Christ. & D. Hawksw.
- ***follmannii** Kondratyuk & Galloway (Kondratyuk & Galloway 1995)
- ***laevisporum** Kalb & Hafellner (Kalb et al. 1995)
- ***lecanorae** (Jaap) D. Hawksw.
- ***lichenicola** (P. Karsten) Petrak & H. Sydow (Etayo et al. 2007)
- ***pyxidatae** (Oudem.) Petrak & H. Sydow
- ***usneae** (Anzi) D. Hawksw.
- ***xanthoriae** M. S. Christ.

LICHENODIPLIS Dyko & D. Hawksw.

- ***dendrographae** Diederich & van den Boom (Diederich 2003)
- ***lecanorae** (Vouaux) Dyko & D. Hawksw.
- ***lecanoricola** (M. S. Cole & Hawksw.) Diederich Syn.: *Laeviomycetes lecanoricola* (Diederich 2003)
- ***lichenicola** Dyko & D. Hawksw.
- ***rinodinicola** Kocourk. & K. Knudsen (Knudsen & Kocourková 2009b)
- ***pertusariicola** (Nyl.) Diederich Erroneously listed here (Diederich 2003)

LICHENOMPHALIA Redhead, Lutzoni, Moncalvo & Vilgalys (Redhead et al. 2002)

- alpina** (Britzelm.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina alpina*, *O. luteovitellina*, *Phytoconis luteovitellina*, *Botrydina luteovitellina* (Redhead et al. 2002)
- hudsoniana** (H. S. Jenn.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina hudsoniana*, *Botrydina viridis*, *Coriscium viride*, *Phytoconis viridis* (Redhead et al. 2002)
- umbellifera** (L. : Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina umbellifera*, *O. ericetorum*, *Phytoconis ericetorum*, *Botrydina botryoides*, *B. vulgaris* (Redhead et al. 2002)
- velutina** (Quél.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina velutina*, *Phytoconis velutina*, *Botrydina velutina* (Redhead et al. 2002)

LICHENOPELTELLA Höhn.

- ***arctomiae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- ***biatorae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- ***heterodermiicola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2002)
- ***leprosulae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- ***peltigericola** (D. Hawksw.) R. Sant. (Alstrup & Cole 1998)
- ***santessonii** (P. M. Kirk & Spooner) R. Sant. (Alstrup & Cole 1998)
- ***stereocaulorum** Zhurb. (Zhurbenko 2010)
- ***thamnoliae** R. Sant. Erroneously listed here; reported only from South America (Diederich 2003)

LICHENOPUCCINIA D. Hawksw. & Hafellner
***poeltii** D. Hawksw. & Haffelner (Diederich 2003)

LICHENOSTICTA Zopf
***alcicornaria** (Lindsay) D. Hawksw.

LICHENOSTIGMA Hafellner
***alpinum** (R. Sant., Alstrup & D. Hawksw.) Ertz & Diederich Syn.: *Phaeosporobolus alpinus* (Ertz et al. 2014)
***ampla** Calat. & Hafellner (Kocourková & Knudsen 2008)
***anatolica** Halici & Kocakaya (Lendemer et al. 2009b)
***bolacinae** Nav.-Ros., Calat. & Hafellner (Kocourková & Knudsen 2008)
***chlaroterae** (F. Berger & Brackel) Ertz & Diederich (Ertz et al. 2014)
***cosmopolites** Hafellner & Calatayud (Hafellner & Calatayud 1999)
***dimelaenae** Calat. & Hafellner (Calatayud et al. 2004)
***elongata** Nav.-Ros. & Hafellner (Navarro-Rosines & Hafellner 1996)
***fellhanerae** (R. C. Harris & Lendemer) Ertz & Diederich Syn.: *Phaeosporobolus fellhanerae* (Ertz et al. 2014)
***maureri** Hafellner (Esslinger & Egan 1995) Syns: *Abrothallus usneae* auct. non Rabenh., *Phaeosporobolus usneae* (Ertz et al. 2014)
***radicans** Calatayud & Barreno (Knudsen & Kocourková 2008)
***rugosa** Thor
***saxicola** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010d)
***semiimmersa** Hafellner (Hafellner 1999)
***subradicans** Hafellner, Calatayud & Nav.-Ros. (Calatayud et al. 2002)

LICHENOTHELIA D. Hawksw.
#**arida** Muggia, Kocourk. & K. Knudsen (Muggia et al. 2015)
#**calcareae** Henssen
#**convexa** Henssen
#**intermixta** Henssen
#**metzleri** (J. Lahm) D. Hawksw. Syn.: *Microthelia metzleri*
#**renobalesiana** D. Hawksw. & V. Atienza (Kocourková & Knudsen 2009d)
#**scopularia** (Nyl.) D. Hawksw. Syns.: *Microthelia aterrima*, *Rinodina aterrima*
#**tenuissima** Henssen
#**umbrophila** Muggia, Kocourk. & K. Knudsen (Muggia et al. 2015)

LICHENOTHRIX Henssen = **PYRENOTHRIX**
riddlei Henssen = *Pyrenothrix nigra*

LICHINA C. Agardh
confinis (O. F. Müller) C. Agardh
willeyi (Tuck.) Henssen

LICHINELLA Nyl.
americana Henssen
cribellifera (Nyl.) P. P. Moreno & Egea Syn.: *Gonohymenia cribellifera*, *Rechingeria cribellifera*
flexa Henssen, Büdel & T. H. Nash (Schultz 2005)
granulosa M. Schultz (Schultz 2005)
intermedia Henssen (Schultz 2005)
iodopulchra (Croz.) P. P. Moreno & Egea (Schultz 2005)
melamphylla (Tuck.) Essl. Syns.: *Gonohymenia melamphylla*, *Pannaria melamphylla*
minnesotensis (Fink) Essl. Syns.: *Forsellia minnesotensis*, *Gonohymenia minnesotensis*
myriospora (Zahlbr.) P. P. Moreno & Egea (Schultz 2005)
nigritella (Lettau) P. P. Moreno & Egea Syn.: *Gonohymenia nigritella*, *Thyrea nigritella*

robustoides Henssen, Büdel & T.H. Nash (Schultz 2005)
sinaica (Marton & Galun) P. P. Moreno & Egea (Schultz 2005)
stipatula Nyl.

LICHINODIUM Nyl.

ahlneri Henssen (Spribille et al. 2010)
canadense Henssen
saxicola Henssen
sirosiphoideum Nyl.

LIGNOSCRIPTA B. D. Ryan

atroalba B. D. Ryan & T. H. Nash (Ryan 2004a)

LITHOGRAPHIA Nyl.

tesserata (DC.) Nyl.

LITHOTHELIUM Müll. Arg.

hyalosporum (Nyl.) Aptroot Syn.: *Arthopyrenia hyalospora*, *Plagiocarpa hyalospora*, *Pleurotrema solivagum*
illotum (Nyl.) Aptroot Syn.: *Plagiocarpa illota*, *P. langloisii*
macrosporum (R. C. Harris) Aptroot Syn.: *Plagiocarpa macrospora*
microsporum R. C. Harris (Harris 1995a)
phaeosporum (R. C. Harris) Aptroot Syn.: *Plagiocarpa phaeosporum*
septemseptatum (R. C. Harris) Aptroot Syn.: *Plagiocarpa septemseptata*

LLIMONAEA Egea & Torrente

californica (Tuck.) Sparrius (Sparrius 2004b) = *Schizopelte crustosa* (Ertz & Tehler 2011)
cerebriformis (Egea & Torrente) Sparrius (Sparrius 2004b) = *Sparria cerebriformis* (Ertz & Tehler 2011)

LLIMONIELLA Hafellner & Nav.-Ros.

***acarosporicola** (Kocourk. & K. Knudsen) Diederich & Ertz Syn.: *Gelatinopsis acarosporicola* (Diederich et al. 2010)
***catapyrenii** Zhurb., Kukwa & Flakus (Zhurbenko 2013)
***cinnabarinae** Pérez-Ortega, Etayo & T. Sprib. (Pérez-Ortega et al. 2011)
***pertusariae** Diederich & Etayo (Diederich & Etayo 2000)
***phaeophysciae** Diederich, Ertz & Etayo (Diederich et al. 2010)
***pyrenulae** Diederich & Etayo (Diederich & Etayo 2000)
***neglecta** (Vainio) Triebel & Rambold = *Rhymbocarpus neglectus*

LOBARIA (Schreber) Hoffm.

anomala (Brodo & Ahti) T. Sprib. & McCune Syns.: *Anomalobaria anomala*, *Pseudocyphellaria anomala* (McCune et al. 2014b)
anthraspis (Ach.) T. Sprib. & McCune Syns.: *Anomalobaria anthraspis*, *Pseudocyphellaria anthraspis*, *Sticta anthraspis* (McCune et al. 2014b)
amplissima (Scop.) Forssell (Tønsberg & Goward 2001) Syn.: *Sticta amplissima*, *S. glomulifera*
hallii (Tuck.) Zahlbr. Syn.: *Sticta hallii*
kurokawae Yoshim.
linita (Ach.) Rabenh. Syn.: *Sticta linita*
oregana (Tuck.) Müll. Arg. Syn.: *Sticta oregana*
pseudopulmonaria Gyelnik
pulmonaria (L.) Hoffm. Syn.: *Sticta pulmonaria*
quercizans Michaux Syn.: *Sticta quercizans*
ravenelii (Tuck.) Yoshim. Syn.: *Sticta erosa*
retigera (Bory) Trevisan
scrobiculata (Scop.) DC. Syn.: *Sticta verrucosa*

silvae-veteris (Goward & Goffinet) Goward & Goffinet Syn.: *Nephroma silvae-veteris* (Goffinet & Goward 1998)

tenuis Vainio

erosa (Eschw.) Nyl. = *L. ravenelii*

isidiosa (Müll. Arg.) Vainio Not in North America.

laetevirens (Lightf.) Zahlbr. = *L. virens* (With.) J. R. Laundon, but not known from North America

lobulifera B. J. Moore = *L. tenuis*

verrucosa (Hudson) Hoffm. = *L. scrobiculata*

LOBOTHALLIA (Clauzade & Cl. Roux) Hafellner

alphoplaca (Wahlenb.) Hafellner Syn.: *Aspicilia alphoplaca*, *Lecanora alphoplaca*, *Lecanora thamnoplaca*

melanaspis (Ach.) Hafellner Syn.: *Aspicilia melanaspis*, *Lecanora melanaspis*

praeradiosa (Nyl.) Hafellner Syn.: *Aspicilia praeradiosa*, *Lecanora praeradiosa*

radiosa (Hoffm.) Hafellner Syn.: *Aspicilia radiosa*, *Lecanora radiosa*, *L. circinata*

LOPADIOPSIS Vainio = **GYALECTIDIUM**

floridana Zahlbr. = *Asterothyrium rotuliforme*

LOPADIUM Körber

augustini (Tuck.) Zahlbr.

coralloideum (Nyl.) Lynge

disciforme (Flotow) Kullhem

dodgei Herre

pezizoideum (Ach.) Körber

alpinum (Körber) R. Sant. = *Schadonia alpina*

domingense (Pers.) Fink = *Letrouitia domingensis*

fecundum Th. Fr. = *Schadonia fecunda*

fuscum Müll. Arg. = *Calopadia fusca*

fuscoluteum (Dickson) Mudd = *Brigantiaea fuscolutea*

gemellum (Anzi) Stizenb. = *Schadonia alpina*

leucoxanthum (Sprengel) Zahlbr. = *Brigantiaea leucoxantha*

puiggarii (Müll. Arg.) Zahlbr. = *Calopadia puiggarii*

phyllocharis (Mont.) Fink = *Tapellaria epiphylla*

vulpinum (Tuck.) Zahlbr. = *Letrouitia vulpina*

LOPEZARIA Kalb & Hafellner (Kalb 1990) = **MEGALARIA** Hafellner (Fryday & Lendemer 2010)

versicolor (Fée) Kalb & Hafellner (Kalb 1990) = *Megalaria versicolor*

LOXOSPORA A. Massal.

assateaguensis Lendemer (Lendemer 2013c)

cismonica (Beltr.) Hafellner Syn.: *Haematomma cismonicum*

confusa Lendemer (Lendemer 2013c)

elatina (Ach.) A. Massal. Syn.: *Haematomma elatinum*

ochrophaea (Tuck.) R. C. Harris Syn.: *Haematomma ochrophaeum*

pustulata (Brodo & W. L. Culb.) R. C. Harris = *Variolaria pustulata*

LOXOSPOROPSIS Henssen

corallifera Brodo, Henssen & Imshaug

MACENTINA Vězda

dictyospora Orange (Will-Wolf 1998) = *Psoroglaena dictyospora* (Harada 2003)

MALCOLMIELLA Vězda

granifera (Ach.) Kalb & Lücking (Lendemer & Knudsen 2007) = *Malmidea granifera*

MALMIDEA Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

flavopustulosa (M. Cáceres & Lücking) M. Cáceres & Kalb (Seavey & Seavey 2014a)

furfurosa (Tuck. ex Nyl.) Kalb & Lücking Syn.: *Lecidea furfurosa* (Lücking et al. 2011b)

fuscella (Müll. Arg.) Kalb & Lücking (Lücking et al. 2011b)

granifera (Ach.) Kalb, Rivas Plata & Lumbsch Syn.: *Lecanora granifera*, *Malcolmiella granifera* (Lücking et al. 2011b)

gyalectoides (Vainio) Kalb & Lücking (Lücking et al. 2011b)

leptoloma (Müll. Arg.) Kalb & Lücking (Lücking et al. 2011b)

piperis (Sprengel) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

rhodopis (Tuck.) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

variabilis Kalb (Lücking et al. 2011b)

vinosa (Eschw.) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

MARCHANDIOBASIDIUM Diederich & Schultheis (Diederich & Lawrey 2007) = **ERYTHRICIUM**

***aurantiacum** (Lasch) Diederich & Schultheis = *Erythrimum aurantiacum* (Hawksworth & Helcini 2015)

MARCHANDIOMYCES Diederich & D. Hawksw.

***buckii** Diederich & Lawrey (Diederich & Lawrey 2007)

***corallinus** (Roberge) Diederich & D. Hawksw. Syn.: *Illosporium corallinum*

#**lignicola** Lawrey & Diederich (DePriest et al. 2005)

MARONEA A. Massal.

constans (Nyl.) Hepp Questionable for N.Am. (Harris 2006b)

polyphaea H. Magn.

carolinae H. Magn. = *M. polyphaea* (Harris 2006b)

porinoidea Zahlbr. = *Ramonia valenzueliana*

MASONHALEA Kärnefelt

inermis (Nyl.) Lumbsch, M. Nelsen & A. Thell Syns.: *Cetraria inermis*, *Tuckermannopsis inermis* (Nelsen et al. 2013)

richardsonii (Hooker) Kärnefelt Syn.: *Cetraria richardsonii*

MASSALONGIA Körber

carnosa (Dickson) Körber

microphylliza (Nyl. ex Hasse) Henssen Syns.: *Placynthium dubium*, *P. microphyllizum*

MASTODIA Hooker f. & Harvey

tessellata (Hooker f. & Harvey) Hooker f. & Harvey Syns.: *Kohlmeyera complicatula*, *Turgidosculum complicatulum* (Kohlmeyer et al. 2004)

MAZOSIA A. Massal.

ocellata (Nyl.) R. C. Harris Syns.: *Platygrapha ocellata*, *Schismatomma ocellatum*, *Thelotrema carneum*, *Enterographa carnea*, *Ocellularia carnea*

carnea (Eckfeldt) Aptroot & M. Cáceres (Aptroot et al. 2014) = *M. ocellata* (Harris 1990)

MEDUSULINA Müll. Arg.

nitida (Eschw.) Müll. Arg. Syn.: *Graphis nitida*

texana Müll. Arg.

MEGALARIA Hafellner

albocincta (Degel.) Tønsberg (Ekman & Tønsberg 1996) Syns.: *Catillaria albocincta*, *Catillochroma albocinctum* (Fryday & Lendemer 2010)

allenae Lendemer & McMullin (McMullin & Lendemer 2016)

beechingii Lendemer (Lendemer 2007b)

brodoana S. Ekman & Tønsberg (Ekman & Tønsberg 1996)

columbiana (G. Merr.) S. Ekman (Ekman & Tønsberg 1996) *Catillaria columbiana*
grossa (Pers. ex Nyl.) Hafellner Syns.: *Catillaria grossa*, *Catinaria grossa*, *C. leucoplaca* auct.
jemtlandica (Th. Fr. & Almq.) Fryday Syn.: *Catillaria jemtlandica*, *Lecidea sublimosa* (Fryday 2004a)
laureri (Hepp ex Th. Fr.) Hafellner (Ekman & Tønsberg 1996) Syns.: *Catillaria laureri*, *Catinaria laureri*
leptocheila (Tuck.) Fryday & Lendemer Syns.: *Catillaria leptocheila*, *Catillochroma leptocheilum* (Fryday & Lendemer 2010)
pannosa (Zahlbr.) Fryday & Lendemer (Fryday & Lendemer 2010)
pulverea (Borrer) Hafellner & E. Schreiner Syn.: *Catillaria pulverea*
versicolor (Flotow) Fryday & Lendemer Syn.: *Catillochroma versicolor* (Fryday & Lendemer 2010)

MEGALOSPORA Meyen

pachycheila (Tuck.) Sipman Syn.: *Bombyliospora pachycheila*, *Heterothecium pachycheilum*
porphyritis (Tuck.) R. C. Harris Syn.: *Bombyliospora porphyritis*
tuberculosa (Fée) Sipman Syn.: *Bombyliospora tuberculosa*, *Heterothecium tuberculosum sanguinaria* (L.) A. Massal. = *Mycoblastus sanguinaria*
versicolor (Fée) Zahlbr. = *Megalaria versicolor*

MEGASPORA (Clauz. & Cl. Roux) Hafellner & V. Wirth

verrucosa (Ach.) Hafellner & V. Wirth Syns.: *Pachyospora verrucosa*, *P. mutabilis*, *Lecanora verrucosa*, *L. mutabilis* (Ach.) Nyl. non Sommerf., *L. urceolaria*, *Pertusaria freyi*

MELANARIA Erichsen = PERTUSARIA

macounii I. M. Lamb = *Pertusaria macounii*

MELANELIA Essl.

agnata (Nyl.) A. Thell Syn.: *Cetraria agnata*
culbersonii (Hale) A. Thell Syn.: *Cetraria culbersonii*
hepatizon (Ach.) A. Thell Syn.: *Cetraria hepatizon*, *C. polyschiza*
stygia (L.) Essl. Syn.: *Parmelia stygia*
albertana (Ahti) Essl. = *Melanelixia albertana*
commixta (Nyl.) A. Thell = *Cetrariella commixta*
disjuncta (Erichsen) Essl. = *Montanelia disjuncta*
elegantula (Zahlbr.) Essl. = *Melanohalea elegantula*
exasperata (De Not.) Essl. = *Melanohalea exasperata*
exasperatula (Nyl.) Essl. = *Melanohalea exasperatula*
fuliginosa (Fr. ex Duby) Essl. = *Melanelixia fuliginosa*, but apparently absent from North America
glabra (Schaerer) Essl. North American reports are *Melanelixia californica*
glabratula (Lamy) Essl. = *Melanelixia glabratula*
glabroides (Essl.) Essl. = *Melanelixia glabroides*
granulosa (Lynge) Essl. = *Montanelia disjuncta*
halei (Ahti) Essl. = *Melanohalea halei*
incolorata (Parrique) Essl. = *Melanohalea elegantula*
infumata (Nyl.) Essl. = *Melanohalea infumata*
multispora (A. Schneider) Essl. = *Melanohalea multispora*
olivacea (L.) Essl. = *Melanohalea olivacea*
olivaceoides (Krog) Essl. = *Melanohalea olivaceoides*
panniformis (Nyl.) Essl. = *Montanelia panniformis*
septentrionalis (Lynge) Essl. = *Melanohalea septentrionalis*
sorediata (Ach.) Goward & Ahti = *Montanelia sorediata*
sorediosa (Almb.) Essl. = *Montanelia sorediata*
subargentifera (Nyl.) Essl. = *Melanelixia subargentifera*
subaurifera (Nyl.) Essl. = *Melanelixia subaurifera*
subelegantula (Essl.) Essl. = *Melanohalea subelegantula*
subolivacea (Nyl.) Essl. = *Melanohalea subolivacea*
substygia (Räsänen) Essl. = *Montanelia tominii*, but North American reports are *M. saximontana* or *M.*

secwepemc

tominii (Oxner) Essl. = *Montanelia tominii*, but North American reports are *M. saximontana* or *M.*

secwepemc

trabeculata (Ahti) Essl. = *Melanohalea trabeculata*

villosella (Essl.) Essl. (Esslinger 2002c) = *Melanelixia villosella*

MELANELIXIA O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (Blanco et al. 2004a)

ahtii S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

albertana (Ahti) O. Blanco et al. Syns.: *Melanelia albertana*, *Parmelia albertana*

californica A. Crespo & Divakar (Divakar et al. 2010)

glabratula (Lamy) Sandler & Arup Syns.: *Melanelia glabratula*, *Parmelia glabratula*

glabroides (Essl.) O. Blanco et al. Syns.: *Melanelia glabroides*, *Parmelia glabroides*

robertsoniorum S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

subargentifera (Nyl.) O. Blanco et al. Syns.: *Melanelia subargentifera*, *Parmelia subargentifera*, *P.*

conspurcata

subaurifera (Nyl.) O. Blanco et al. Syns.: *Melanelia subaurifera*, *Parmelia subaurifera*

villosella (Essl.) O. Blanco et al. Syns.: *Melanelia villosella*, *Parmelia villosella*

fuliginosa (Fr. ex Duby) O. Blanco et al. North American reports are misidentifications of *M. glabratula* (Leavitt et al. 2012)

glabra (Schaerer) O. Blanco et al. North American reports are *M. californica*

MELANOGRAPHIA Müll. Arg. (Ertz & Diederich 2015)

***tribulodes** (Tuck.) Müll. Arg. Syn.: *Melaspilea tribulodes*, *Opegrapha tribulodes* (Ertz & Diederich 2015)

MELANOHALEA O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (Blanco et al. 2004a)

beringiana S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

clari S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

columbiana S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

elegantula (Zahlbr.) O. Blanco et al. Syns.: *Melanelia elegantula*, *M. incolorata*, *Parmelia elegantula*

exasperata (De Not.) O. Blanco et al. Syns.: *Melanelia exasperata*, *Parmelia exasperata*, *P. aspera*, *P. aspidota*

exasperatula (Nyl.) O. Blanco et al. Syns.: *Melanelia exasperatula*, *Parmelia exasperatula*

halei (Ahti) O. Blanco et al. Syns.: *Melanelia halei*, *Parmelia halei*

infumata (Nyl.) O. Blanco et al. Syns.: *Melanelia infumata*, *Parmelia infumata*

multispora (A. Schneider) O. Blanco et al. Syns.: *Melanelia multispora*, *Parmelia multispora*

olivacea (L.) O. Blanco et al. Syns.: *Melanelia olivacea*, *Parmelia olivacea*

olivaceoides (Krog) O. Blanco et al. Syns.: *Melanelia olivaceoides*, *Parmelia olivaceoides*

septentrionalis (Lynge) O. Blanco et al. Syns.: *Melanelia septentrionalis*, *Parmelia septentrionalis*

subelegantula (Essl.) O. Blanco et al. Syns.: *Melanelia subelegantula*, *Parmelia subelegantula*

subolivacea (Nyl.) O. Blanco et al. Syns.: *Melanelia subolivacea*, *Parmelia subolivacea*

tahlitan S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

trabeculata (Ahti) O. Blanco et al. Syns.: *Melanelia trabeculata*, *Parmelia trabeculata*

MELANOLECIA Hertel

transitoria (Arnold) Hertel ex Poelt

jurana (Schaerer) Hertel = *Farnoldia jurana*

micropsis (A. Massal.) Hertel = *Farnoldia micropsis*

MELANOMMA Nitschke ex Fuckel

⁺**oxysporum** (Zahlbr.) D. Hawksw. Syn.: *Microthelia oxyspora*

MELANOPHLOEA P. James & Vězda

americana K. Knudsen & Lendemer (Knudsen et al. 2011b) = *Trimmatothelopsis americana* (Knudsen & Lendemer 2016) Syn.: *Thelenella americana* (Knudsen & Kocouroková 2013)

MELANOTHECA Körber = **PYRENULA**

- achariana Fée = *Pyrenula anomala*
- aggregata (Fée) Müll. Arg. = not in North America
- anomala (Ach.) A. Massal. = *Pyrenula anomala*
- cinerata Zahlbr. = *Pyrenula sexlocularis*
- concatervans (Nyl.) Zahlbr. = *Pyrenula sexlocularis*
- cruenta (Mont.) Müll. Arg. = *Pyrenula cruenta*
- esenbeckiana Fée = *Tomasellia esenbeckiana*, but a misidentification for North America
- subincruenta (Nyl.) Zahlbr. = *Pyrenula cruenta*
- wrightii Müll. Arg. = misidentification for North American records

MELANOTOPELIA Lumbsch & Mangold (Mangold et al. 2008)

- toensbergii** (Vězda & Kantvilas) Lumbsch & Mangold Syn.: *Topeliopsis toensbergii* (Mangold et al. 2008)

MELANOTREMA A. Frisch (Frisch 2006)

- meiospermum** (Nyl.) A. Frisch Syn.: *Ocellularia meiosperma*, *Phaeotrema meiospermum* (Frisch 2006)
- platystomum** (Mont.) Frisch (Seavey & Seavey 2014a)

MELASPILEA Nyl.

- amota** Nyl.
- cinerascens** (Willey) Fink Syn.: *Opegrapha cinerascens*
- constrictella** (Stirton) A. L. Sm.
- ***cupularis** Müll. Arg.
- demissa** (Tuck.) Zahlbr. Syn.: *Opegrapha demissa*
- ***epigena** Müll. Arg. (Esslinger & Egan 1995)
- gemella** (Eschw.) Nyl. (Esslinger & Tucker 2009)
- interjecta** (Leighton) A. L. Sm. (Villella et al. 2013)
- maculosa** (Fr.) Müll. Arg.
- stellans** Zahlbr.
- urceolata** (Fr.) Ertz & Diederich (Ertz & Diederich 2015)
- arthonioides (Fée) Nyl. = *M. urceolata* (Ertz & Diederich 2015)
- deformis (Schaerer) Nyl. = *Hazslinszkyia gibberulosa*, but misidentifications for North America (Perlmutter et al. 2015)
- difformis (Rabenh.) Nyl. = *Hazslinszkyia gibberulosa* (Ertz & Diederich 2015)
- gibberulosa* (Ach.) Zwackh (Brodo 1967) = *Hazslinszkyia gibberulosa* (Ertz & Diederich 2015)
- lentiginosula (Nyl.) A. L. Sm. = misidentification for North America (Perlmutter et al. 2015)
- mesophlebia (Nyl.) Müll. Arg. = *Opegrapha mesophlebia* (Perlmutter et al. 2015)
- octomera Müll. Arg. = *Opegrapha astraea* (Perlmutter et al. 2015)
- +**proximella** (Nyl.) Nyl. = *Melaspileella proximella* (Ertz & Diederich 2015)
- ***tribulodes** (Tuck.) Müll. Arg. = *Melanographa tribulodes* (Ertz & Diederich 2015)

MELASPILEELLA (P. Karsten) Vainio (Ertz & Diederich 2015)

- +**proximella** (Nyl.) Ertz & Diederich Syn.: *Melaspileella proximella*

MENEGAZZIA A. Massal.

- subsimilis** (H. Magn.) R. Sant. (Bjerke 2003)
- terebrata** (Hoffm.) A. Massal. Syns.: *Parmelia pertusa*, *P. sipeana*
- pertusa* (Schrank) Stein = *M. terebrata*

MERISMATIUM Zopf

- ***coccisporum** (Norman) Vouaux
- ***decolorans** (Rehm ex Arnold) Triebel
- ***heterophractum** (Nyl.) Vouaux (Zhurbenko & Laursen 2003)
- ***nigritellum** (Nyl.) Vouaux (Zhurbenko & Dillman 2010)
- ***peregrinum** (Flotow) Triebel (Harris & Lendemer 2005)

METAMELANEA Henssen

melambola (Tuck.) Henssen Syn.: *Pyrenopsis melambola*, *Synalissa melambola*
umbonata Henssen (Fryday 2006)

METASPHAERIA Sacc.

***tartarina** (Nyl.) Keissler (Talbot et al. 2000) = *Sagediopsis campsteriana*

MICAREA Fr.

alabastrites (Nyl.) Coppins (Tønsberg & Coppins 2000)
anterior Coppins (McCune et al. 2014b)
assimilata (Nyl.) Coppins Syn.: *Lecidea assimilata*
botryoides (Nyl.) Coppins (McCune 1996)
byssacea (Th. Fr.) Czarnota, Guzow-Krzemińska & Coppins (Launis & Myllys 2014)
chlorosticta (Tuck.) R. C. Harris Syn.: *Bacidia chlorosticta*
cinerea (Schaerer) Hedl.
coppinsii Tønsberg (Fryday 2006)
deminuta Coppins (Fryday & Coppins 2007)
denigrata (Fr.) Hedl. Syn.: *Lecidea aniptiza*
elachista (Körber) Coppins & R. Sant.
endocyanea (Tuck. ex Willey) R. C. Harris Syn.: *Bacidia endocyanea*
globulosella (Nyl.) Coppins
hedlundii Coppins
incrassata Hedl.
leprosula (Th. Fr.) Coppins & A. Fletcher
lignaria (Ach.) Hedl. Syn.: *Bacidia lignaria*
lithinella (Nyl.) Hedl.
marginata Coppins & Muhr (Fryday 2006)
melaena (Nyl.) Hedl. Syn.: *Bacidia melaena*, *Bilimbia melaena*
micrococca (Körber) Gams ex Coppins (Fryday & Coppins 2007)
misella (Nyl.) Hedl. Syn.: *Lecidea misella*
myriocarpa V. Wirth & Vězda ex Coppins (Tønsberg 1999a)
neostipitata Coppins & P. May (Coppins & May 2001)
nitschkeana (J. Lahm ex Rabenh.) Harm.
paratropa (Nyl.) Alstrup (Alstrup et al. 1994)
peliocharpa (Anzi) Coppins & R. Sant. Syn.: *Bacidia trisepta*, *Bilimbia trisepta*
perparvula (Nyl.) Coppins & Printzen (Printzen 1995, Coppins 2008)
prasina Fr. Syn.: *Catillaria prasina*
prasinella (Jatta) I. M. Lamb (Spribille et al. 2010)
pycnidiophora Coppins & P. James
rhabdogena (Norman) Hedl. Syn.: *Lecidea punctella* (Printzen 1995)
subalpina Coppins & T. Sprib. (Coppins & Spribille 2004)
synotheoides (Nyl.) Coppins (Tønsberg & Coppins 2000)
ternaria (Nyl.) Vězda Syn.: *Lecidea suballinita*
turfosa (A. Massal.) Du Rietz
vulpinaris (Nyl.) Muhr
xanthonica Coppins & Tønsberg (Coppins & Tønsberg 2001)
bauschiana (Körber) V. Wirth & Vězda = *Brianaria bauschiana* (Ekman & Svensson 2014)
clavopycnidiata Brodo & Tønsberg = *Szczawinskia tsugae* (Aptroot et al. 1997)
crassipes (Th. Fr.) Coppins = *Helocarpon crassipes*
erratica (Körber) Hertel, Rambold & Pietschmann = *Leimonis erratica*
gelatinosa (Flörke) Brodo = *Trapeliopsis gelatinosa*
globularis "(Ach. ex Nyl.) Hedl." = *M. misella*
lutulata (Nyl.) Coppins = *Brianaria lutulata* (Ekman & Svensson 2014)
lynceola (Th. Fr.) Palice = misidentification for North America? (Coppins & Fryday 2006b)
melanobola (Nyl.) Coppins = misidentification for North America (Coppins & Fryday 2006b)

populina (Müll. Arg. ex Nyl.) R. A. Anderson & M. P. Carmer = *Lecidea populina*
 subviolascens (H. Magn.) Coppins = *Micarea paratropa* (Alstrup et al. 1994)
 sylvicola (Flotow) Vězda & V. Wirth = *Brianaria sylvicola* (Ekman & Svensson 2014)
 trisepta (Hellbom) Wetmore = *M. peliocarpa*
 tuberculata (Sommerf.) R. A. Anderson = *Brianaria tuberculata* (Ekman & Svensson 2014)
 violacea (Crouan ex Nyl.) Hedl. = *M. peliocarpa*
 viridescens (Schrader) Brodo = *Trapeliopsis viridescens*

MICAREOPSIS R. C. Harris & Lendemer (Lendemer et al. 2013)
irriguata R. C. Harris & Lendemer

MICROCALICIUM Vainio

⁺**ahlneri** Tibell
[#]**arenarium** (Hampe ex A. Massal.) Tibell Syn.: *Coniocybopsis arenaria*
^{*}**conversum** Tibell (Tibell & Ryan 2004)
^{*}**disseminatum** (Ach.) Vainio Syns.: *Mycocalicium disseminatum*, *Calicium disseminatum*
^{*}**subpedicellatum** (Schaerer) Tibell = *M. disseminatum*

MICROGLAENA Körber nom. illegit. = **THELENELLA**

corrosa (Körber) Arnold = *Protothelenella corrosa*
hassei Zahlbr. = *Thelenella hassei*
inductula (Nyl.) Servít = *Thelenella inductula*
muscorum (Fr.) Th. Fr. = *Thelenella muscorum*
sordidula Th. Fr. = *Thelenella sordidula*
sphinctrinoides (Nyl.) Lönnr. = *Protothelenella sphinctrinoides*
subcorallina Hasse = *Thelenella modesta*
sychnogonoides Zahlbr. = *Thelenella hassei*

MICROLYCHNUS A. Funk

epicorticis A. Funk = *Gyalideopsis epicorticis*

MICROPHIALE (Stizenb.) Zahlbr. = **COENOGONIUM**

diluta (Pers.) Zahlbr. (Fink 1935) = *Coenogonium pineti*
lutea (Dickson) Zahlbr. (Fink 1935) = *Coenogonium luteum*

MICROTHELIA Körber = **ANISOMERIDUM**

[#]*aterrima* (Kremp. ex Anzi) Zahlbr. = *Lichenothelia scopularia*
hymnothora (Ach.) Trevisan = *Granulopyrenis hymnothora*
[#]*inops* Degel. = *Kirschsteiniothelia aethiops*
[#]*metzleri* J. Lahm = *Lichenothelia metzleri*
[#]*micula* auct. non Flotow ex Körber = *Kirschsteiniothelia aethiops* for most North American records
⁺*oblongata* Müll. Arg. = *Mycomicrothelia wallrothii*
⁺*oxyspora* Zahlbr. = *Melanomma oxysporum*
⁺*thelena* (Ach.) Trevisan = *Mycomicrothelia thelena*, but not found in North America
verruculosa Anastasiou = identity uncertain
⁺*wallrothii* (Hepp) Rehm = *Mycomicrothelia wallrothii*
[#]*willeyana* Müll. Arg. = *Mycomicrothelia willeyana*

MINUTOEXCIPULA V. Atienza & D. Hawksw.

^{*}**mariana** V. Atienza (Diederich 2003)
^{*}**tuckerae** V. Atienza & D. Hawksw.

MIRIQUIDICA Hertel & Rambold (Hertel & Rambold 1987)

atrofulva (Sommerf.) A. J. Schwab & Rambold Syn.: *Lecidea atrofulva*
deusta (Stenh.) Hertel & Rambold Syn.: *Lecidea deustata*
garovaglioi (Schaerer) Hertel & Rambold Syns.: *Lecidea garovaglioi*, *L. aenea*

griseoatra (Flotow) Hertel & Rambold Syn.: (?) *Lecidea subplumbea*
instrata (Nyl.) Hertel & Rambold Syn.: *Lecidea instrata*
intrudens (H. Magn.) Hertel & Rambold Syn.: *Lecanora intrudens*
leucophaea (Flörke ex Rabenh.) Hertel & Rambold Syn.: *Lecidea leucophaea*, *L. marylandensis*
leucophaeoides (Nyl.) Hertel & Andreev Syn.: *Lecidea leucophaeoides* (Hertel & Andreev 2003)
lulensis (Hellbom) Hertel & Rambold Syn.: *Lecidea lulensis*, *L. circumnigrata* var. *reagens*
nigroleprosa (Vainio) Hertel & Rambold (Spribille et al. 2010)
plumbeoatra (Vainio) A. J. Schwab & Rambold Syn.: *Lecidea plumbeoatra*, *L. furva*, *L. humilis*
pulvinatula (Arnold) Hertel & Rambold Syn.: *Lecidea circumnigrata*
pyncocarpa (Körber) Andreev Syn.: *Lecidea marciensis*, *L. pyncocarpa* (Coppins & Fryday 2006b)
scotopholis (Tuck.) B. D. Ryan & Timdal Syn.: *Lecanora scotopholis*, *Lecidea scotopholis*, *Psora scotopholis*, *Psorula scotopholis* (Nash et al. 2004a)
[#]**verrucariicola** (B. D. Ryan) K. Knudsen & Kocourk. Syn.: *Lecanora verrucariicola*, *Protoparmelia ryaniana* (Knudsen et al. 2015)
mexicana Rambold, Sipman & Hertel (Knudsen & Owe-Larson 2005) = *M. scotopholis* (Knudsen et al. 2008b, Lendemer & Knudsen 2008, Knudsen et al. 2015)

MOBERGIA H. Mayrhofer & Sheard

angelica (Stizenb.) H. Mayrhofer & Sheard Syn.: *Rinodina angelica*, *R. bolodes*, *R. dirinoides*, *Dimelaena angelica*
calculiformis (W. A. Weber) H. Mayrhofer & Sheard Syn.: *Rinodina calculiformis*, *R. platyloba*

MOELLEROPSIS Gyelnik

nebulosa (Hoffm.) Gyelnik subsp. **nebulosa** (Jørgensen 2002)
nebulosa (Hoffm.) Gyelnik subsp. **frullaniae** Maass (Jørgensen 2000a, Maass 1986)

MONOBLASTIA Riddle

borinquensis R. C. Harris (Harris 1995a)
buckii R. C. Harris
cypressi R. C. Harris (Harris 1995a)
rappii Zahlbr.

MONOBLASTIOPSIS R. C. Harris & C. A. Morse

konzana R. C. Harris & C. A. Morse (Harris & Morse 2008)
nigrocortina R. C. Harris & C. A. Morse (Harris & Morse 2008)

MONODICTYS S. Hughes

***cellulosa** S. Hughes (Diederich 2003)
 ***fuliginosa** Etayo (Zhurbenko 2009b)

MONTANELIA Divakar, A. Crespo, Wedin & Essl. (Divakar et al. 2012)

disjuncta (Erichsen) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia disjuncta*, *Parmelia disjuncta*, *P. granulosa*, *P. denalii*
ocultipanniformis S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)
panniformis (Nyl.) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia panniformis*, *Parmelia panniformis*
saximontana (R. Anderson & W. Weber) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016) Syn.: *Parmelia saximontana*, *P. substygia* p.p.
secwepemc S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)
sorediata (Ach.) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia sorediata*, *M. sorediosa*, *Parmelia sorediata*, *P. sorediosa*
tominii (Oxner) Divakar, A. Crespo, Wedin & Essl. North American reports are *M. saximontana* or *M. secwepemc* Syn.: *Melanelia tominii*, *Parmelia saximontana*, *P. substygia*

MOSIGIA Fr. ex A. Massal. = **RIMULARIA**

gibbosa (Ach.) Fr. ex A. Massal. = *Rimularia gibbosa*

MUELLERELLA Hepp ex Müll. Arg.

- ***erratica** (A. Massal.) Hafellner & V. John Syn.: *M. pygmaea* v. *athallina* (Knudsen & Kocourková 2009b)
- ***hospitans** Stizenb. (Spribille et al. 2010)
- ***lecanactidis** Diederich & van den Boom (Diederich 2003)
- ***lichenicola** (Sommerf. ex Fr.) D. Hawksw.
- ***pygmaea** (Körber) D. Hawksw. Syn.: *Tichothecium pygmaeum*
- ***ventosicola** (Mudd) D. Hawksw.
- **pygmaea* var. *athallina* (Müll. Arg.) Triebel = **M. erratica*
- **pygmaea* var. *ventosicola* (Mudd) Triebel = **M. ventosicola*

MULTICLAVULA R. Petersen

- coronilla** (G. W. Martin) R. Petersen
- corynoides** (Peck) R. Petersen
- mucida** (Fr.) R. Petersen
- sharpii** R. Petersen
- vernalis** (Schwein.) R. Petersen

MYCOBILIMBIA Rehm

- berengeriana** (A. Massal.) Hafellner & V. Wirth Syn.: *Lecidea berengeriana*
- carneoalbida** (Müll. Arg.) S. Ekman & Printzen (Ekman 2004c) Syns.: *Bacidia carneoalbida*, *B. sphaeroides*, *Biatora carneoalbida*, *Bilimbia sphaeroides* auct.
- epixanthoides** (Nyl.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen (Hafellner & Türk 2001) Syns: *Biatora epixanthoides*, *Lecidea epixanthoides*
- fissuriseda** (Poelt) Poelt & Hafellner Syn.: *Lecidea fissuriseda*
- pilularis** (Körber) Hafellner & Türk Syns.: *Bacidia sphaeroides*, *Biatora sphaeroides*, *Bilimbia sphaeroides*, *Catillaria sphaeroides* (Hafellner & Türk 2001)
- tetramera** (De Not.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen ex Hafellner & Türk (Hafellner & Türk 2001) Syn.: *Bacidia fusca*
accedens (Arnold) V. Wirth ex Hafellner = *Bilimbia accedens*
austrocalifornica (Zahlbr.) Knudsen (Knudsen 2005b) = *Carbonea latypizodes*
fusca (A. Massal.) Hafellner & V. Wirth = *M. tetramera*
hypnorum (Lib.) Kalb & Hafellner = *Bryobilimbia hypnorum*
lobulata (Sommerf.) Hafellner = *Bilimbia lobulata*
lurida (Ach.) Hafellner & Türk (Hafellner & Türk 2001) = *Romjularia lurida*
microcarpa (Th. Fr.) W. Brunnbauer = *Bilimbia microcarpa*
obscurata (Sommerf.) Rehm = *M. tetramera*
sabuletorum (Schreber) Hafellner = *Bilimbia sabuletorum*

MYCOBLASTUS Norman

- affinis** (Schaerer) T. Schauer
- alpinus** (Fr.) Kernst.
- caesius** (Coppins & P. James) Tønsberg Syn.: *Haematomma caesium*
- glabrescens** (Nyl.) Zahlbr. (Kantvilas 2009)
- sanguinarioides** Kantvilas (Spribille et al. 2011b)
- sanguinarius** (L.) Norman Syn.: *Megalospora sanguinaria*
fucatus (Stirton) Zahlbr. = *Violella fucata* (Spribille et al. 2011a)
- marginatus* Degel. = *M. affinis* (Spribille & Tønsberg 2007)
- melinus* (Kremp. ex Nyl.) Hellbom = *M. affinis*
- tornoënsis* (Nyl.) R. A. Anderson = *Japewia tornoënsis*

MYCOCALICIUM Vainio

- +**albonigrum** (Nyl.) Fink Syn.: *Calicium albonigrum*
- +**americanum** (R. Sant.) Tibell
- +**calicioides** (Nádv.) Tibell Syn.: *Sphinctrinella calicioides*

fuscipes (Tuck.) Fink Syn.: *Calicium fuscipes*
ravenelii (Tuck.) Fink Syn.: *Calicium ravenelii*
reticulatum Nád. v.
⁺**sequoiae** Bonar
⁺**subtile** (Pers.) Szatala Syns.: *M. parietinum*, *Calicium subtile*
victoriae (C. Knight & F. Wilson) Nád. v. (Nash et al. 1998; Tibell 2007)
⁺**compressulum** Nyl. ex Szatala = *Phaeocalicium compressulum*
^{*}**disseminatum** (Ach.) Fink = *Microcalicium disseminatum*
^{*}**microcephalum** (Sm.) Fink = *Sphinctrina anglica*
⁺**parietinum** (Ach. ex Schaerer) D. Hawksw. = *M. subtile*
[#]**pusiolum** (Ach.) Räsänen = *Chaenothecopsis pusiola*
⁺**rappii** Nád. v. = *Chaenothecopsis rappii* (Harris 1995a)
⁺**savonicum** Räsänen = *Chaenothecopsis savonica*

MYCOGLAENA Höhnelt

⁺**acuminans** (Nyl.) Vainio
⁺**alni** (Dearness & House) Barr
⁺**canadensis** (Ellis & Everh.) Barr
⁺**elegans** (Berk. & Curtis) Höhnelt
⁺**meridionalis** (Zahlbr.) Szatala
⁺**myricae** (Nyl.) R. C. Harris
⁺**quercicola** R. C. Harris
⁺**subcoerulescens** (Nyl.) Höhnelt

MYCOMICROTHELIA Keissler

[#]**captiosa** (Kremp.) D. Hawksw.
⁺**dothideaspora** (Cook & Harkn.) D. Hawksw.
[#]**hemisphaerica** (Müll. Arg.) D. Hawksw.
⁺**inaequalis** (Fabre) D. Hawksw.
[#]**subfallens** (Müll. Arg.) D. Hawksw.
⁺**wallrothii** (Hepp) D. Hawksw. Syn.: *Microthelia wallrothii*, *M. oblongata*
[#]**willeyana** (Müll. Arg.) D. Hawksw. Syn.: *Microthelia willeyana*
thelena (Ach.) D. Hawksw. Syn.: *Microthelia thelena*, but not found in North America

MYCOPORELLUM Müll. Arg.

californicum Zahlbr. = *Mycoporum californicum* (Harris 1995a)
difforme (Minks) Fink = *Mycoporum lacteum* (Harris 1995a)
hassei Zahlbr. = *Mycoporum lacteum* (Harris 1995a)
sparsellum (Nyl.) Müll. Arg. = *Mycoporum sparsellum* (Harris 1995a)

MYCOPORUM Flotow ex Nyl.

acervatum R. C. Harris (Harris 1995a)
antecellens (Nyl.) R. C. Harris Syn.: *Arthopyrenia antecellens* (Harris 1995a)
biseptatum Lendemer & R. C. Harris Syn.: *Arthonia biseptata* (Lendemer & Harris 2014c, Lendemer & Harris 2015a)
buckii R. C. Harris (Harris 1995a)
californicum (Zahlbr.) R. C. Harris (Harris 1995a) Syns.: *Tomasellia californica*, *Mycoporellum californicum*
compositum (A. Massal.) R. C. Harris Syn.: *Dermatina "pyrenocarpa"*
eschweileri (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Tomasellia eschweileri*
⁺**hippocastani** (DC) Coppins (Aptroot 2002c)
lacteum (Ach.) R. C. Harris (Harris 1995a) Syn.: *Mycoporellum difforme*, *M. hassei*, *Tomasellia lactaea*
mycoporoides (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Arthopyrenia mycoporoides*
pyncocarpoides Müll. Arg.
sparsellum Nyl. (Harris 1995a) Syns.: *Tomasellia sparsella*, *Mycoporellum sparsellum*

uniloculatum R. C. Harris (Harris 1995a)
ohiense Nyl. ex Fink = *M. compositum*
pyncocarpum Nyl. = *M. compositum*

MYELOCHROA (Asahina) Elix & Hale

aurulenta (Tuck.) Elix & Hale Syns.: *Parmelina aurulenta*, *Parmelia aurulenta*, *P. silvestris*
galbina (Ach.) Elix & Hale Syns.: *Parmelina galbina*, *Parmelia galbina*, *P. subquercifolia*, *P. sulphurosa*
metarevoluta (Asahina) Elix & Hale Syns.: *Parmelina metarevoluta*, *Parmelia metarevoluta*
obsessa (Ach.) Elix & Hale Syns.: *Parmelina obsessa*, *Parmelia obsessa*, *P. finkii*

MYOCHROIDEA Printzen, T. Sprib. & Tønsberg (Printzen et al. 2008)

leprosula (Arnold) Printzen, T. Sprib. & Tønsberg
minutula Printzen, T. Sprib. & Tønsberg
porphyrospoda (Anzi) Printzen, T. Sprib. & Tønsberg Syns.: *Biatora porphyrospoda*, *Lecidea porphyrospoda*
rufofusca (Anzi) Printzen, T. Sprib. & Tønsberg Syn. : *Biatora rufofusca*, *Lecidea rufofusca*

MYRIOLECIS Clements

agardhiana (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora agardhiana* (Zhao et al. 2016)
albescens (Hoffm.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora albescens*, *L. galactina* (Zhao et al. 2016)
andrewii (B. de Lesd.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora andrewii* (Zhao et al. 2016)
carlottiana (Lewis & Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora carlottiana* (Zhao et al. 2016)
contractula (Nyl.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora contractula* (Zhao et al. 2016)
crenulata (Hooker) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora crenulata* (Zhao et al. 2016)
dispersa (Pers.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora dispersa* (Zhao et al. 2016)
flowersiana (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora flowersiana* (Zhao et al. 2016)
fugiens (Nyl.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora fugiens* (Zhao et al. 2016)
hagenii (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora hagenii* (Zhao et al. 2016)
invadens (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora invadens* (Zhao et al. 2016)
juniperina (Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora juniperina* (Zhao et al. 2016)
percrenata (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora percrenata* (Zhao et al. 2016)
perpruinosa (Frøberg) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora perpruinosa* (Zhao et al. 2016)
persimilis (Th. Fr.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora persimilis* (Zhao et al. 2016)
salina (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora salina* (Zhao et al. 2016)
schofieldii (Brodo) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora schofieldii* (Zhao et al. 2016)
semipallida (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syns.: *Lecanora flotoviana*, *L. semipallida* (Zhao et al. 2016)
straminea (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora straminea* (Zhao et al. 2016)
torrida (Vainio) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora torrida* (Zhao et al. 2016)
wetmorei (Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora wetmorei* (Zhao et al. 2016)
zosteræ (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora zosteræ* (Zhao et al. 2016)

MYRIONORA R. C. Harris

albidula (Willey) R. C. Harris Syn.: *Biatorella albidula*

MYRIOSPORA Nägeli ex Uloth (Arcadia & Knudsen 2012)

hassei (Herre) K. Knudsen & L. Arcadia Syns.: *Acarospora hassei*, *A. particularis*, *Silobia hassei* (Arcadia & Knudsen 2012)
rhagadiza (Nyl.) K. Knudsen & L. Arcadia Syns.: *Acarospora amphibola* auct., *Silobia rhagadiza* (Arcadia & Knudsen 2012)
scabrida (Hedl. ex Magn.) K. Knudsen & L. Arcadia Syns.: *Acarospora scabrida*, *Silobia scabrida* (Arcadia & Knudsen 2012)
smaragdula (Wahlenb. ex Ach.) K. Knudsen & L. Arcadia Syns.: *Acarospora amphibola*, *A. smaragdula*, *A. smaragdula* var. *lesdainii*, *Silobia smaragdula* (Arcadia & Knudsen 2012)

heppii (Nägeli ex Körber) Hue = *Caeruleum heppii*
immersa (Fink ex J. Hedrick) R. C. Harris = *Caeruleum immersum*

MYRIOTREMA Fée

erodens R. C. Harris
glauculum (Nyl.) Hale
laeviusculum (Nyl.) Hale Syn.: *Leptotrema laeviusculum*
microporum (Mont.) Hale Syn.: *Ocellularia micropora*
peninsulae R. C. Harris
pyncnoporellum (Nyl.) Hale (Lücking et al. 2011b)
reclusum (Kremp.) Hale Syn.: *Leptotrema reclusum*
rugiferum (Harm.) Hale
terebratulum (Nyl.) Hale Syn.: *Ocellularia terebratula*
bahianum (Ach.) Hale North American reports are *Ocellularia obturascens* (Lücking et al. 2011)
clandestinum (Fée) Hale Not present in North America
compunctum (Ach.) Hale = *Leucodecton occultum*
glaucescens (Nyl.) Hale = *Leucodecton glaucescens*
glaucophaenum (Kremp.) Hale = *Glaucotrema glaucophaenum*
granulosum (Leighton) Hale Erroneously reported for North America
halei (Tuck.) Hale = *Thelotrema halei*
subcompunctum (Nyl.) Hale = *Leucodecton subcompunctum*
wightii (Taylor) Hale = *Sanguinotrema wightii*

MYXOBILIMBIA Hafellner = BILIMBIA (Veldkamp 2004)

accedens (Arnold) Hafellner = *Bilimbium accedens*
sabuletorum (Schreber) Hafellner = *Bilimbium sabuletorum*

MYXOPHORA Döbbeler & Poelt

⁺**leptogiophila** (Minks ex G. Winter) Nik. Hoffm. & Hafellner (Hoffmann & Hafellner 2000)

MYXOTRICHUM Kunze

***bicolor** (Ehrenb. ex Pers.) Fr.
poluninii Apinis = *M. bicolor*

NADVORNIKIA Tibell

hawaiiensis (Tuck.) Tibell
sorediata R. C. Harris

NAETROCYNBE Körber

#atomarioides (Müll. Arg.) R. C. Harris (Harris 1995a)
#attractospora (Zahlbr.) R. C. Harris (Harris 1995a)
#cedrina (Zahlbr.) R. C. Harris (Harris 1995a)
#fraxini (Massal.) R. C. Harris (Harris 1995a)
herrei K. Knudsen & Lendemer (Knudsen & Lendemer 2009b)
#megalospora (Lönnr.) R. C. Harris (Harris 1995a)
#punctiformis (Pers.) R. C. Harris (Harris 1995a)
#quassiicola (Fée) R. C. Harris (Harris 1995a)
saxicola (A. Massal.) R. C. Harris (Lendemer et al. 2010)
#massalongiana (Hepp) R. C. Harris A European species, listed here erroneously (Harris 1995a)

NANOSTICTIS M. S. Christ.

***christiansenii** Etayo (Alstrup & Cole 1998)
***pseudocyphellariae** Sherwood

NECTRIA (Fr.) Fr.

⁺**zonata** Seaver

- *lecanodes Ces. (Esslinger & Egan 1995) = Nectriopsis lecanodes
- *parmeliae (Berk. & M. A. Curtis) D. Hawksw. = Ovicuculispora parmeliae
- *rubefaciens Ellis & Everh. = Nectriopsis rubefaciens

NECTRIELLA Nitschke ex Fuckel

- *anisospora Lowen = Pronectria anisospora

NECTRIOPSIS Maire

- ***cladoniicola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- ***lecanodes** (Ces.) Diederich & Schroers Syn. Nectria lecanodes (Sérusiaux et al. 1999)
- ***rubefaciens** (Ellis & Everh.) M. S. Cole & D. Hawksw. Syn.: Nectria rubefaciens (Cole & Hawksworth 2001)
- *parmeliae (Berk. & M. A. Curtis) M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = Ovicuculispora parmeliae

NEOBARYA Lowen

- ***peltigerae** Lowen, Boqueras & Gomez-Bolea (Zhurbenko 2009c)

NEOCATAPYRENIUM Harada

- disparatum** Breuss (Breuss 2005)

NEOCOLEROA Petrak

- ***inundata** (Vainio) Diederich (Harris & Lendemer 2009) Reported as uncertain

NEOFUSCELIA Essl. = XANTHOPARMELIA (Blanco et al. 2004b; but, see McCune et al 2014b)

- ahtii (Essl.) Essl. = Xanthoparmelia ahtii
- atticoides (Essl.) Essl. = Xanthoparmelia atticoides
- brunella (Essl.) Essl. = Xanthoparmelia brunella
- chiricahuensis (R. A. Anderson & W. A. Weber) Essl. = Xanthoparmelia chiricahuensis
- infrapallida (Essl.) Essl. = Xanthoparmelia infrapallida
- loxodes (Nyl.) Essl. = Xanthoparmelia loxodes
- occidentalis (Essl.) Essl. = Xanthoparmelia occidentalis
- pulla (Ach.) Essl. = Xanthoparmelia pulla, but not present in North America
- pustulosa (Essl.) Essl. = Xanthoparmelia pustulosa
- subhosseana (Essl.) Essl. = Xanthoparmelia subhosseana
- verruculifera (Nyl.) Essl. = Xanthoparmelia verruculifera

NEOLAMYA Theissen & Sydow

- ***peltigerae** (Mont.) Theissen & Sydow (Alstrup & Cole 1998)
- ***xanthoparmeliae** Kocourk. (Kocourková 2009)

NEPHROMA Ach.

- arcticum** (L.) Torss.
- bellum** (Sprengel) Tuck.
- expallidum** (Nyl.) Nyl.
- helveticum** Ach. subsp. **helveticum** Syn.: Nephromium helveticum
- helveticum** subsp. **sipeanum** (Gyelnik) Goward & Ahti
- isidiosum** (Nyl.) Gyelnik
- laevigatum** Ach.
- occultum** Wetmore
- parile** (Ach.) Ach.
- resupinatum** (L.) Ach. Syn.: Sticta drummondii
- aspera Tuck. = N. helveticum subsp. helveticum
- canadense Räsänen = N. helveticum subsp. sipeanum
- filarszkyanum Gyelnik = N. bellum
- helveticum Ach. var. sipeanum (Gyelnik) Wetmore = N. helveticum subsp. sipeanum

laevigatum auct. non Ach. = *N. bellum*
 lusitanicum Schaerer = *N. laevigatum* Ach. non auct.
 massachusettsianum Gyelnik = *N. helveticum* subsp. *helveticum*
 plittii Gyelnik = *N. helveticum* subsp. *helveticum*
 rameum (Schaerer) A. Massal. (Fink 1935) = *N. resupinatum* (L.) Ach. (Wetmore 1960)
 silvae-veteris Goward & Goffinet = *Lobaria silvae-veteris*
 sipeanum Gyelnik = *N. helveticum* subsp. *sipeanum*
 szatalae Gyelnik = *N. laevigatum*
 subtomentellum (Nyl.) Gyelnik = *N. bellum*
 washingtoniense Gyelnik = *N. laevigatum*

NEPHROMIUM Nyl. = NEPHROMA

helveticum (Ach.) Nyl. = *Nephroma helveticum*
tropicum (Müll. Arg.) Zahlbr. (Gyelnik 1932) = *Nephroma helveticum* subsp. *helveticum*

NEPHROMOPSIS Müll. Arg.

californica Gyelnik = *Tuckermannopsis orbata* (Tucker 2013)
ciliaris (Ach.) Hue = *Tuckermannopsis ciliaris*
platyphylla (Tuck.) Herre = *Tuckermannopsis platyphylla*

NESOLECHIA A. Massal.

cladoniscum (Willey) Fink = apothecia of *Pycnothelia papillaria*
**oxyspora* (Tul.) A. Massal. = *Phacopsis oxyspora*
**oxysporella* (Nyl.) Arnold (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)
papillariae (Willey) Fink (Fink 1935) = apothecia of *Pycnothelia papillaria* (Rambold & Triebel 1992)
**thallicola* (A. Massal.) A. Massal. = *Phacopsis thallicola*
vitellinaria (Nyl.) Rehm (Fink 1935) = *Carbonea vitellinaria* (Scholz 2000)

NEUROPOGON Nees & Flotow = USNEA

lambii Imshaug = *Usnea lambii*
sulphureus (J. König) Hellbom = *Usnea sphacelata*
sphacelatus (R. Br.) Alstrup & E. S. Hansen = *Usnea sphacelata*

NIEBLA Rundel & Bowler

cedrosensis J. E. Marsh & T. H. Nash Syns.: *Vermilacinia cedrosensis*, *V. reptiloderma* (Bowler & Marsh 2004)
cephalota (Tuck.) Rundel & Bowler Syns.: *Desmazieria cephalota*, *Ramalina cephalota*, *Vermilacinia cephalota* (Bowler & Marsh 2004)
ceruchis Rundel & Bowler Syns.: *Desmazieria ceruchis*, *Ramalina ceruchis*, *Vermilacinia cerebra*, *V. corrugata*, *V. ceruchis*, *V. howei*, *V. leoni*, *V. leopardina*, *V. nylanderi*, *V. vesiculosa*, *V. zebrina* (Bowler & Marsh 2004)
ceruchoides Rundel & Bowler Syns.: *Desmazieria ceruchoides*, *Vermilacinia ceruchoides*, *V. acicularis*, *V. pumila* (Bowler & Marsh 2004)
combeoides (Nyl.) Rundel & Bowler Syns.: *Desmazieria combeoides*, *Ramalina combeoides*, *Vermilacinia combeoides* (Bowler & Marsh 2004)
homalea (Ach.) Rundel & Bowler Syns.: *Desmazieria homalea*, *D. testudinaria*, *Ramalina homalea*, *R. testudinaria*
isidiascens Bowler, J. E. Marsh, T. H. Nash & Riefner
laevigata Bowler & Rundel Syns.: *Vermilacinia johncassadyi*, *V. laevigata*, *V. ligulata*, *V. paleoderma*, *V. rigida*, *V. rosei*, *V. varicosa* (Bowler & Marsh 2004)
polymorpha Bowler, J. E. Marsh, T. H. Nash, & Riefner Syn.: *Vermilacinia polymorpha* (Bowler & Marsh 2004)
procera Rundel & Bowler Syn.: *Vermilacinia procera* (Bowler & Marsh 2004)
ramosissima Spjut (Spjut 1996, Knudsen & Wheeler 2015)
robusta (R. Howe) Rundel Syns.: *Ramalina combeoides* var. *robusta*, *Vermilacinia robusta* (Bowler & Marsh 2004)

tuberculata Riefner, Bowler, J. E. Marsh & T. H. Nash Syn: Vermilacinia tuberculata (Bowler & Marsh 2004)

caespitosa Spjut (Spjut 1996) = N. homalea

cornea Spjut (Spjut 1996) = N. homalea

dactylifera Spjut (Spjut 1996) = N. homalea

disrupta (Nyl.) Spjut (Spjut 1996) = N. homalea

dissecta Spjut (Spjut 1996) = N. homalea

eburnea Spjut (Spjut 1996) = N. homalea

fimbriata Spjut (Spjut 1996) = N. homalea

flaccescens (Nyl.) Rundel & Bowler = a South American species, not in North America

flagelliforma Spjut (Spjut 1996) = N. homalea

halei Spjut (Spjut 1996) = N. homalea

infundibula Spjut (Spjut 1996) = N. homalea

laminaria Spjut (Spjut 1996) = N. homalea

palmeri Spjut (Spjut 1996) = N. homalea

siphonoloba Spjut (Spjut 1996) = N. homalea

sorediata Spjut (Spjut 1996) = N. homalea

sorocarpia Spjut (Spjut 1996) = N. homalea

testudinaria (Nyl.) Spjut (Spjut 1996) = N. homalea

undulata Spjut (Spjut 1996) = N. homalea

NISSLIA Auersw.

***cladoniicola** D. Hawksw. & W. Gams (Hansen & Alstrup 1995)

***lobariae** Etayo & Diederich (Zhurbenko & Dillman 2010)

***peltigericola** (D. Hawksw.) Etayo (Zhurbenko 2010)

NIGROPUNCTA D. Hawksw.

***rugulosa** D. Hawksw. (Alstrup & Cole 1998)

NODOBRYORIA Common & Brodo

abbreviata (Müll. Arg.) Common & Brodo Syns.: Bryoria abbreviata, Alectoria abbreviata

oregana (Tuck.) Common & Brodo Syns.: Bryoria oregana, Alectoria oregana

subdivergens (E. Dahl) Common & Brodo Syns.: Bryoria subdivergens, Alectoria subdivergens

NORMANDINA Nyl.

pulchella (Borrer) Nyl. Syn.: Lauderlindsaya borreri (Muggia et al. 2010)

OBRYZUM Wallr.

***corniculatum** Wallr. (Diederich 2007b)

OCELLULARIA G. Meyer

americana Hale

aubertianoides (Nyl.) Müll. Arg. (Lücking et al. 2011b)

cavata (Ach.) Müll. Arg.

concolor Meyen & Flotow (Harris 1995a)

fissa (Nyl.) Hale

obturascens (Nyl.) Hale (Lücking et al. 2011b) Syn.: Thelotrema bahianum var. obturascens

postposita (Nyl.) A. Frisch (Frisch 2006)

praestans (Müll. Arg.) Hale Syn.: Thelotrema praestans

retispora R. C. Harris

sanfordiana (Zahlbr.) Hale Syn.: Thelotrema sanfordianum Possible synonym of Ocellularia interposita (Frisch 2006)

alborosella (Nyl.) R. Sant. = Chapsa alborosella

auberiana (Mont.) Hale = Stegobolus auberianus

bahiana (Ach.) A. Frisch North American reports are O. obturascens (Lücking et al. 2011)

carnea (Eckfeldt) Zahlbr. = Mazosia ocellata

domingensis (Fée) Müll. Arg. = misidentification for North America
 emersa (Kremp.) Müll. Arg. (Harris 1995a) = *Rhabdodiscus emersus*
 floridensis Fink = *Thelotrema porinoides*
 glaucophaena (Kremp.) Zahlbr. = *Glaucotrema glaucophaenum*
 granulosa (Tuck.) Zahlbr. = *Rhabdodiscus granulosus*
 interposita (Nyl.) Hale = misidentification for North America
 lathraea (Tuck.) Zahlbr. = *Thelotrema lathraeum*
 leiostoma (Tuck.) R. C. Harris = *Redingeria leiostoma* (Tuck.) A. Frisch, but not in North America (Frisch & Kalb 2006)
 meiosperma (Nyl.) Hale = *Melanotrema meiospermum*
 micropora (Mont.) Müll. Arg. = *Myriotrema microporum*
 stictidea (Nyl.) Vězda = *Trinathotrema stictideum*
 subtilis (Tuck.) Riddle = *Thelotrema subtile*
 terebratula (Nyl.) Müll. Arg. = *Myriotrema terebratulum*

OCHROLECHIA A. Massal.

africana Vainio
alaskana (Verseghe) Kukwa (Kukwa 2009b)
androgyna (Hoffm.) Arnold
antillarum Brodo
arborea (Kreyer) Almb.
bryophaga (Erichsen) K. Schmitz & Lumbsch Syn.: *Pertusaria bryophaga*
farinacea Howard
frigida (Sw.) Lynge
gowardii Brodo
grimmiae Lynge
gyalectina (Nyl.) Zahlbr.
inaequatula (Nyl.) Zahlbr.
isidiata (Malme) Verseghe (Lendemer & Harris 2014b)
juvenalis Brodo
laevigata (Räsänen) Verseghe ex Kukwa (Kukwa 2011)
mahluensis Räsänen (Brodo & Lendemer 2012; Knudsen 2012)
mexicana Vainio
microstictoides Räsänen (Brodo & Lendemer 2012)
montana Brodo
oregonensis H. Magn.
pseudopallescens Brodo
rhodoleuca (Th. Fr.) Brodo Syn.: *Pertusaria rhodoleuca*
splendens Lumbsch & Messuti (Roemer et al. 2004)
subathallina H. Magn.
subisidiata Brodo
subpallescens Verseghe
subplicans (Nyl.) Brodo subsp. **subplicans** Syn.: *Pertusaria subplicans*
subplicans subsp. **hultenii** (Erichsen) Brodo Syn.: *Pertusaria hultenii*
szatalaënsis Verseghe
tartarea (L.) A. Massal.
 [*Pertusaria trachydactyla* Vainio]
trochophora (Vainio) Oshio var. **trochophora**
trochophora var. **pruiniosella** Brodo
turneri (Sm.) Hasselrot (Brodo & Lendemer 2012)
upsaliensis (L.) A. Massal.
xanthostoma (Sommerf.) K. Schmitz & Lumbsch Syn.: *Pertusaria xanthostoma*
yasudae Vainio
 alboflavescens (Wulfen) Zahlbr. = a European taxon, not in North America
 apiculata Verseghe Mistakenly reported for North America
 californica Verseghe = *O. oregonensis*

elisabethae-kolae Verseghe = *O. frigid*
 frigida f. alaskana Verseghe = *O. alaskana*
 geminipara (Th. Fr.) Vainio = *Pertusaria geminipara*
 gonatodes (Ach.) Räsänen = *O. frigida*
 groenlandica Verseghe = *O. frigida* (Kukwa 2009a)
 pacifica H. Magn. = *Coccotrema pocillarium*
 pallescens (L.) A. Massal. Not in North America
 parella (L.) A. Massal. Not in North America
 pennsylvanica Verseghe = *O. yasudae*
 pseudotartarea (Vainio) Verseghe = *O. pallescens*
 pterulina (Nyl.) Howard = *O. frigida*
 rhamni-purshianae E. Senft Identity uncertain
 rosella (Müll. Arg.) Verseghe = *O. trochophora*
 soresiosa Howard = *O. szatalaensis*
 subviridis (Høeg) Erichsen Not in North America
 tuckermanii Verseghe = *O. yasudae*

ODONTOTREMA Nyl. (Baloch et al. 2013b)

*bryoriae Diederich & Etayo (Diederich et al. 2002) = *Sphaeropezia intermedia*
 *intermedium Diederich, Zhurb. & Etayo (Diederich et al. 2002) = *Sphaeropezia intermedia*
 *lecanorae Diederich & G. Marson (Diederich et al. 2002) = *Sphaeropezia lecanorae*
 *melaneliae Diederich & Zhurb. (Diederich et al. 2002) = *Sphaeropezia melaneliae*
 *ochrolechiae Diederich, Holien & Zhurb. (Diederich et al. 2002) = *Sphaeropezia ochrolechiae*
 *santessonii Zhurb., Etayo & Diederich (Zhurbenko 2012) = *Sphaeropezia santessonii*
 *sipei (Grumann) Diederich (Diederich et al. 2002) = *Sphaeropezia sipei*
 *thamnoliae Zhurb., Diederich & Etayo (Zhurbenko 2012) = *Sphaeropezia thamnoliae*

OMPHALARIA Girard & Dunal ex Nyl. = THYREA

girardii Durieu & Mont. = *Thyrea girardii*
 kansana Tuck. = *Peccania kansana*
 pulvinata (Schaerer) Nyl. (Claassen 1912) North American reports are *Thyrea confusa*
 symphorea (Ach.) Tuck. = *Synalissa ramulosa*
 umbella Tuck. = *Lempholemma umbella*

OMPHALINA Quélet

alpina (Britzelm.) Bresinsky & Stangl = *Lichenomphalia alpina*
 ericetorum (Pers. : Fr.) M. T. Lange = *Lichenomphalia umbellifera*
 hudsoniana (H. S. Jenn.) H. E. Bigelow = *Lichenomphalia hudsoniana*
 luteovitellina (Pilát & Nannf.) M. T. Lange = *Lichenomphalia alpina*
 *peltigerina (Peck) P. Collin = *Arrhenia peltigerina*
 umbellifera (L. : Fr.) Quélet = *Lichenomphalia umbellifera*
 velutina (Quélet) Quélet = *Lichenomphalia velutina*

OMPHALODISCUS Schol. = UMBILICARIA

crustulosus (Ach.) Schol. = *Umbilicaria crustulosa*
 decussatus (Vill.) Schol. = *Umbilicaria decussata*
 krascheninnikovii (Savicz) Schol. = *Umbilicaria krascheninnikovii*, but N.A. reports are *U. polaris*
 virginis (Schaerer) Schol. = *Umbilicaria virginis*

OMPHALODIUM Meyen & Flotow

arizonicum (Tuck.) Tuck. = *Omphalora arizonica*

OMPHALORA T. H. Nash & Hafellner

arizonica (Tuck.) T. H. Nash & Hafellner Syns.: *Lecanora arizonica*, *Omphalodium arizonicum*, *Parmelia arizonica*

OPEGRAPHA Ach.

- ***agelaea** Fée (Ertz 2009)
- ***anomea** Nyl. (Ertz et al. 2004)
- astraea** Tuck. Syn.: *Melaspilea octomera*
- aurantiaca** B. de Lesd. (Harris 1995a)
- bonplandii** Fée
- ***buelliae** Zhurb. (Zhurbenko 2013)
- candida** Müll. Arg.
- corticola** Coppins & P. James (Tønsberg 2002)
- ***diffracticola** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)
- dolomitica** (Arnold) Clauzade & Cl. Roux ex Torrente & Egea (Lendemer et al. 2009b)
- erosa** Egea & Ertz (Ertz & Egea 2007))
- ***foreaui** (Moreau) Hafellner & R. Sant. (Diederich 2003)
- fumosa** Coppins & P. James (Tønsberg 1997 [1998])
- ***geographicola** (Arnold) Hafellner (Dillman et al. 2012)
- gyrophorica** F. Seavey & J. Seavey (Seavey et al. 2014)
- ***hellespontica** Vondrák & Kocourk. (Kocourková & Knudsen 2009d)
- herbarum** Mont.
- keyensis** F. Seavey & J. Seavey (Seavey et al. 2014)
- ***lamyi** (O. J. Rich. ex Nyl.) Triebel Syn.: *Leciographa lamyi*
- leucoplaca** Müll. Arg.
- levidensis** Willey (Fink 1935, Esslinger & Tucker 2009)
- lithyrga** Ach.
- ***melanospila** Müll. Arg. (Diederich 2003)
- mesophlebia** Nyl. Syn.: *Melaspilea mesophlebia* (Perlmutter et al. 2015)
- microcycla** Tuck.
- moroziana** Lendemer (Lendemer 2009)
- niveoatra** (Borrer) J. R. Laundon
- ***phaeophysciae** R. Sant., Diederich, Ertz & Christnach (Hafellner 2009)
- prosodea** Ach.
- protocetrarica** F. Seavey & J. Seavey (Seavey et al. 2014)
- protuberans** Zahlbr.
- ***pulvinata** Rehm Syn.: *Opegraphoidea pulvinata*
- ravenelii** (Tuck.) Tehler Syn.: *Lecanactis ravenelii*, *Platygrapha ravenelii*, *Schismatomma ravenelii*
- ***rupestris** Pers. Syn.: *Leciographa parasitica*
- sorediifera** P. James
- ***sphaerophoricola** Isbrand & Alstrup
- ***stereocaulicola** Alstrup & D. Hawksw. (Zhurbenko 2010)
- ***thelotrematis** Coppins (Tønsberg 1997 [1998])
- umbellulariae** Zahlbr.
- vulgata** Ach.
- xerica** Torrente & Egea (Ertz & Egea 2007)
- atra** Pers. = *Arthonia atra* (Ertz et al. 2009)
- betulina** Sm. = *O. herbarum*
- bicolor** R. C. Harris & Lendemer (Harris & Lendemer 2005) = *Alyxoria bicolor* (Ertz & Tehler 2011)
- brattiae** Egea & Ertz (Ertz & Egea 2007) = *Lecanographa brattiae* (Ertz & Tehler 2011)
- calcareo** Turner ex Sm. & Sowerby = *Arthonia calcarea* (Ertz et al. 2009)
- cinerea** Chevall. = *O. vulgata*
- cypressi** R. C. Harris = *Vigneronia cypressi* (Ertz et al. 2015b)
- demissa** Tuck = *Melaspilea demissa*
- diaphora** (Ach.) Ach. = *Alyxoria varia*
- diaphoroides** Nyl. = *Lecanographa grumulosa*
- filicina** Mont. = *Fouragea filicina* (Frisch et al. 2014)
- ***glaucomaria** (Nyl.) Källsten ex Hafellner = **Phacographa glaucomaria*
- gyrocarpa** Flotow = *Gyrographa gyrocarpa* (Ertz et al. 2015b)
- hassei** Zahlbr. = *Lecanographa hypothallina*

herpetica (Ach.) Ach. = *O. rufescens*
 herpetica var. subocellata Ach. (Fink 1935) = *O. rufescens* (Santesson et al. 2004)
 hypothallina (Zahlbr.) Tehler = *Lecanographa hypothallina*
 lichenoides Pers. = *Alyxoria varia*
 longissima Müll. Arg. = *Dimidiographa longissima* (Ertz & Tehler 2011)
 mesophlaebia Nyl. (Fink 1935) Orthographic variant of *O. mesophlebia* Nyl. = *Melaspilea mesophlebia*
 mougeotii A. Massal. (Harris & Ladd 2005) = *Alyxoria mougeotii*
 ochrocheila Nyl. = *Alyxoria ochrocheila* (Ertz & Tehler 2011)
 oulocheila Tuck. = *Dermiscellum oulocheila*
 *physciaria (Nyl.) D. Hawksw. & Coppins (Cole & Hawksworth 2001) = *Phacothecium varium* (Hafellner 2009)
 prosiliens Stirton = *O. protuberans*
 pulcaris auct. = *Alyxoria varia*
 *quaternella Nyl. = *O. anomea* (Ertz et al. 2004)
 rimalis Pers. ex Ach. = *Alyxoria varia*
 rufescens Pers. = *Pseudoschismatomma rufescens* (Ertz et al. 2015b)
 *saxicola Ach. = *O. rupestris*
 scaphella var. gemella (Eschw.) Eckfeldt (Fink 1935) = *Melaspilea gemella*
 *trassii S. Y. Kondr. & Coppins (Coppins & Kondratyuk 1998) = *O. foreaui*
 *tribulodes Tuck. (Mohr 1901) = *Melanographa tribulodes*
 varia Pers. = *Alyxoria varia* (Ertz & Tehler 2011)
 viridis (Pers. ex Ach.) Behlen & Desberger = *Zwackhia viridis* (Ertz & Tehler 2011)
 *wetmorei M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = *O. anomea* (Ertz et al. 2004)
 zonata Körber (Sparrius 2004b) = *Enterographa zonata* (Ertz et al. 2009)

OPEGRAPHOIDEA Fink

***staurothelicola** Fink (fide D. Ertz)
 *pulvinata (Rehm) Fink = *Opegrapha pulvinata*
 *quaternella (Nyl.) Fink = *Opegrapha anomea*

OPHIOPARMA Norman

lapponica (Räsänen) Hafellner & R. W. Rogers
rubricosa (Müll. Arg.) S. Ekman Syns.: *Bacidia rubricosa*, *B. herrei*, *Haematomma californicum*
ventosa (L.) Norman (May 1997)
 herrei (Zahlbr.) Kalb & Staiger (Staiger & Kalb 1995) = *O. rubricosa* (Ekman 1996)

ORCULARIA (Malme) Kalb & Giralt (Kalb & Giralt 2011)

insperata (Nyl.) Kalb & Giralt Syn.: *Amandinea insperata* (Kalb & Giralt 2011)
placodiomorpha (Vainio) Kalb & Giralt Syn.: *Amandinea placodiomorpha*, *Buellia placodiomorpha* (Kalb & Giralt 2011)

ORPHNIOSPORA Körber

moriopsis (A. Massal.) D. Hawksw. Syns.: *Buellia atrata*, *B. moriopsis*, *B. coracina*
 atrata (Sm.) Poelt = *O. moriopsis*

OVICUCULISPORA Etayo (Etayo 2010)

***parmeliae** (Berk. & M. A. Curtis) Etayo (Etayo 2010) Syns.: *Nectria parmeliae*, *Nectriopsis parmeliae*

OXNERIA S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a, 2003b) = **XANTHOMENDOZA** (Lindblom 2006)

weberi S. Y. Kondr. & Kärnefelt = *Xanthomendoza weberi* (Lindblom 2006)

PACHYOSPORA A. Massal.

mutabilis (Ach.) A. Massal. = *Megaspora verrucosa*
 verrucosa (Ach.) A. Massal. = *Megaspora verrucosa*

PACHYPELTIS Søchting, Arup & Frödén (Arup et al. 2013)

cladodes (Tuck.) Søchting, Frödén & Arup Syn.: *Caloplaca cladodes*, *Placodium cladodes*

invadens (Lynge) Søchting, Frödén & Arup Syn.: *Caloplaca invadens*

PACHYPHIALE Lönnr. = **GYALECTA** (Baloch et al. 2013a)

carneola (Ach.) Arnold = *Gyalecta carneola*

fagicola (Arnold) Zwackh = *Gyalecta fagicola*

gyalizella (Nyl.) S. Ekman = *Gyalecta gyalizella*

PACHYPHYSIS R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

ozarkana R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

PALICELLA Rodr. Flakus & Printzen (Rodriguez Flakus & Printzen 2014)

filamentosa (Stirton) Rodr. Flakus & Printzen Syn.: *Lecanora filamentosa*

schizochromatica (Pérez-Ortega, T. Sprib. & Printzen) Rodr. Flakus & Printzen Syn.: *Lecanora schizochromatica*

PANNARIA Delise

conoplea (Ach.) Bory

elator Stirton (Jørgensen 2000c)

hookeri (Borrer ex Sm.) Nyl.

lurida (Mont.) Nyl. subsp. **lurida** Syn.: *Physma luridum*

lurida subsp. **quercicola** P. M. Jørg. (Jørgensen 2000c)

lurida subsp. **russellii** (Tuck.) P. M. Jørg. (Jørgensen 2000c)

rubiginella P. M. Jørg. & Sipman (Jørgensen 2005)

rubiginosa (Thunb.) Delise

subfusca P. M. Jørg. (Jørgensen 2000c)

tavaresii P. M. Jørg.

ahlneri P. M. Jørg. = *Fuscopannaria ahlneri*

crossophylla Tuck. = *Santessoniella crossophylla*

cyanolepra Tuck. = *Fuscopannaria cyanolepra*

granatina (Sommerf.) Th. Fr. = *Euopsis granatina*

halei Tuck. = *Phyllopsora halei*

hypnorum (Vahl) Körber = *Psoroma hypnorum*

isidiata Degel. = *Vestergrenopsis isidiata*

laceratula Hue = *Fuscopannaria laceratula*

lepidiota (Sommerf.) Th. Fr. = *Fuscopannaria praetermissa*

leucophaea (Vahl) P. M. Jørg. = *Vahliella leucophaea*

leucosticta Tuck. = *Fuscopannaria leucosticta*

leucostictoides Ohlsson = *Fuscopannaria leucostictoides*

malmei C. W. Dodge (Jørgensen 2000c) = misidentification of *P. rubiginella*

mariana (Fr.) Müll. Arg. = *Lepidocollema marianum* (Jørgensen 2000c, Ekman et al. 2014)

maritima P. M. Jørg. = *Fuscopannaria maritima*

mediterranea Tav. = *Fuscopannaria mediterranea*

melamphylla Tuck. = *Lichinella melamphylla*

microphylla "(Sw.)" Delise = *Vahliella leucophaea*

microphylla var. **californica** Tuck. = *Vahliella californica*

molybdaea (Pers.) Tuck. = *Coccocarpia pellita*

nigra (Hudson) Nyl. = *Placynthium nigrum*

nigrocincta (Mont.) Nyl. (Mohr 1901) = *Parmeliella nigrocincta*, but a probable misidentification for North America

pannosa Nyl. = *Parmeliella pannosa*

petersii (Nyl.) Tuck. = *Placynthium petersii*

pezizoides (Weber) Trevisan = *Protopannaria pezizoides*

pityrea auct. = *P. conoplea*

praetermissa Nyl. = *Fuscopannaria praetermissa*

pulveracea P. M. Jørg. & Henssen = Fuscopannaria pulveracea
 rubiginosa var. lanuginosa (Hoffm.) Zahlbr. = P. conoplea
 saubinetii (Mont.) Nyl. = Vahliella saubinetii
 stenophylla Tuck. = Placynthium stenophyllum
 stylophora Vainio = Lepidocollema stylophorum (Ekman et al. 2014)
 sonomensis Tuck. = Vestergrenopsis sonomensis (Spribille & Muggia 2012)
 stellata (Tuck.) Nyl. = Coccocarpia stellata
 triptophylla (Ach.) A. Massal. = Parmeliella triptophylla
 waghornei Eckfeldt = identity uncertain, possibly Santessoniella arctophila

PARABAGLIETTOA Gueidan & Cl. Roux

disjuncta (Arnold) Krzewicka (McCune et al. 2014b)

PARANECTRIA Sacc.

***alstrupii** Zhurb. (Zhurbenko & Dillman 2010)

***oropensis** (Ces.) D. Hawks. & Piroz.

ssp. parvisseptata M. S. Cole & D. Hawks. (Cole & Hawksworth 2001) = P. oropensis (Diederich 2003)

PARAPARMELIA Elix & J. Johnston

alabamensis (Hale & McCull.) Elix & J. Johnston = Canoparmelia alabamensis (Hale & McCull.) Elix (Elix 2001)

PARASCHISMATOMMA Ertz & Tehler (Ertz & Tehler 2012)

ochroleucum (Zahlbr.) K. Knudsen, Ertz & Tehler Syns.: Chiodecton ochroleucum, Platygrapha plurilocularis, Schismatomma pluriloculare (Ertz & Tehler 2011)

PARATHELIUM Nyl. = **PYRENULA**

cuyabense Malme = Pyrenula cuyabensis

emergens Nyl. ex Müll. Arg. = Pyrenula erumpens

martinicanum Vainio = Pyrenula adacta

microcarpum Riddle = Pyrenula microtheca

subferrugineum Malme = Pyrenula circumfiniens

PARMELIA Ach.

barrenoae Divakar, M. C. Molina & A. Crespo (Hodkinson et al. 2010)

fertilis Müll. Arg.

fraudans (Nyl.) Nyl.

hygrophila Goward & Ahti

mayi Divakar, A. Crespo, M. C. Molina (Molina et al. 2011)

neodiscordans Hale

omphalodes (L.) Ach.

pinnatifida Kurok. (Crespo et al. 2004)

pseudosulcata Gyelnik

saxatilis (L.) Ach.

skultii Hale

squarrosa Hale

sulcata Taylor

acanthifolia Pers. = Parmotrema cetratum

abstrusa Vainio = Relicina abstrusa

ahtii Essl. = Xanthoparmelia ahtii

ajoensis T. H. Nash = Xanthoparmelia ajoensis

alabamensis Hale & McCull. = Canoparmelia alabamensis

albertana Ahti = Melanelixia albertana

aleuritica Nyl. = Arctoparmelia centrifuga

almquistii Vainio = Allantoparmelia almquistii

alpicola Th. Fr. = Allantoparmelia alpicola

amazonica Nyl. = *Canoparmelia amazonica*
 andreana Müll. Arg. = *Flavopunctelia flaventior*
 antillensis Nyl. = *Parmotrema antillensis*
 appalachensis W. L. Culb. = *Punctelia appalachensis*
 arizonica (Tuck.) Nyl. (Fink 1935) = *Omphalora arizonica*
 arnoldii Du Rietz = *Parmotrema arnoldii*
 arseneana Gyelnik = *Xanthoparmelia novomexicana*
 aspera A. Massal. = *Melanohalea exasperata*
 aspidota (Ach.) Poetsch = *Melanohalea exasperata*
 atrofusca (Schaerer) Crombie = *Brodoa atrofusca*
 atticoides Essl. = *Xanthoparmelia atticoides*
 aurulenta Tuck. = *Myelochroa aurulenta*
 austerodes Nyl. = *Hypogymnia austerodes*
 austrosinensis Zahlbr. = *Parmotrema austrosinense*
 baltimorensis Gyelnik & Föris = *Flavoparmelia baltimorensis*
 birulae Elenkin var. *grumosa* Llano = *Arctoparmelia separata*
 bitteri Lynge = *Hypogymnia bitteri*
 bolliana Müll. Arg. = *Punctelia bolliana*
 borrieri (Sm.) Turner = *Punctelia borrieri*
 brunella Essl. = *Xanthoparmelia brunella*
 caperata (L.) Ach. = *Flavoparmelia caperata*
 caperata var. *incorrupata* (J. P. Moore) E. C. Berry = *Flavopunctelia praesignis*
 caroliniana Nyl. = *Canoparmelia caroliniana*
 catawbiensis (Degel.) Hale & M. Wirth = *Hypotrachyna catawbiensis*
 centrifuga (L.) Ach. = *Arctoparmelia centrifuga*
 cetrarioides (Delise ex Duby) Nyl. = *Cetrelia cetrarioides*
 cetrata Ach. = *Parmotrema cetratum*
 cetrata var. *hypotropoides* Nyl. ex Willey = *Parmotrema hypotropum*
 chiricahuensis R. A. Anderson & W. A. Weber = *Xanthoparmelia chiricahuensis*
 chlorochroa Tuck. = *Xanthoparmelia chlorochroa*
 chrysantha Tuck. = *Parmotrema xanthinum* (Lendemer 2016a)
 cirrhata Fr. = *Everniastrum cirrhatum*, but a misidentification for North America.
 cladonia (Tuck.) Du Rietz = *Pseudevernia cladonia*
 claudelii (Harm.) Vainio = *Parmotrema stuppeum*
 colpodes (Ach.) Stizenb. (Fink 1935) = *Anzia colpodes*
 commensurata Hale = *Parmotrema commensuratum*
 concreta Stizenb. Identity uncertain, see note under *Flavoparmelia*
 confoederata W. L. Culb. = *Bulbothrix confoederata*
 congensis Stein = *Xanthoparmelia congensis*, but not found in North America north of Mexico.
 congruens auct. = *Pseudoparmelia uleana*
 conspersa (Ehrh. ex Ach.) Ach. = *Xanthoparmelia conspersa*
 conspersa var. *subconspersa* (Nyl.) Gyelnik = *Flavoparmelia rutidota*
 conspurcata (Schaerer) Vainio = *Melanelixia subargentifera*
 coralloidea (Meyen & Flotow) Vainio (Fink 1935) = *Leptogium coralloideum*, but N. Am. reports were apparently an unknown species of *Parmotrema* (Esslinger & Tucker 2009)
 coronata Fée = *Bulbothrix coronata*
 crinita Ach. = *Parmotrema crinitum*
 cristifera Taylor = *Parmotrema cristiferum*
 croceopustulata Kurok. = *Hypotrachyna croceopustulata*
 crozalsiana B. de Lesd. ex Harm. = *Crespoa crozalsiana*
 cryptochlorophaea Hale = *Canoparmelia cryptochlorophaea*
 cubensis Nyl. = *Pseudoparmelia cubensis*
 cumberlandia (Gyelnik) Hale = *Xanthoparmelia cumberlandia*
 cylisphora (Ach.) Vainio = *Flavoparmelia caperata*
 darrowi J. W. Thomson = *Flavopunctelia darrowi*
 delavayi Hue = *Hypogymnia delavayi* (Hue) Rass., but a misidentification for North America

denalii Krog = *Montanelia disjuncta*
 densirhizinata Kurok. = *Hypotrachyna densirhizinata*
 dentella Hale & Kurok. = *Hypotrachyna dentella*
 dierythra Hale = *Xanthoparmelia dierythra*
 diffractaica Essl. = *Parmotrema diffractaicum*
 digitata Lynge = *Hypotrachyna physcioides* (Nyl.) Hale, but a misidentification for North America (?)
 dilatata Vainio = *Parmotrema dilatatum*
 disjuncta Erichsen = *Montanelia disjuncta*
 dissecta Nyl. = *Hypotrachyna minarum*
 dissensa T. H. Nash = *Xanthoparmelia dissensa*
 dominicana Vainio = *Parmotrema dominicanum*
 dubia (Wulfen) Schaerer = *Punctelia subrudecta* (Nyl.) Krog, but a misidentification for North America
 duplicata var. douglasicola Gyelnik = *Hypogymnia physodes*
 elegantula (Zahlbr.) Szatala = *Melanohalea elegantula*
 elongata J. Hillmann = *Hypogymnia duplicata* (Spribille et al. 2010)
 encausta (Sm.) Nyl. = *Brodoa intestiniformis*, but this species is not found in North America
 endosulphurea (Hillm.) Hale = *Parmotrema endosulphureum*
 endoxantha G. Merr. = *Pseudoparmelia uleana*
 ensifolia Kurok. = *Hypotrachyna ensifolia*
 enteromorpha Ach. = *Hypogymnia enteromorpha*
 epiclada Hale = *Parmotrema submarginale*
 erecta E. C. Berry = *Parmotrema perforatum*
 eurysaca Hue = *Parmotrema eurysacum*
 exasperata De Not. = *Melanohalea exasperata*
 exasperatula Nyl. = *Melanohalea exasperatula*
 eximbricata (Gyelnik) Hale & Kurok. = *Relicina eximbricata*
 finkii Zahlbr. = *Myelochroa obsessa*
 flaventior Stirton = *Flavopunctelia flaventior*
 flavicans (Tuck.) Tuck. = *Flavoparmelia caperata*
 formosana Zahlbr. = *Hypotrachyna osseoalba*
 frondifera G. Merr. = *Punctelia bolliana*
 fuliginosa (Wibel) Nyl. (Fink 1935) = *Melanelixia fuliginosa*, but North American reports are misidentifications (Leavitt et al. 2012)
 furfuracea (L.) Ach. = *Pseudevernia intensa* and *P. consocians* for North American records
 galbina Ach. = *Myelochroa galbina*
 glabra (Schaerer) Nyl. North American records are *Melanelixia californica*
 glabratula (Lamy) Nyl. = *Melanelixia glabratula*
 glabroides Essl. = *Melanelixia glabroides*
 goebelii Zenker North American reports are *Bulbothrix scortella* (Benatti & Elix 2012)
 gondylophora Hale = *Hypotrachyna gondylophora*
 graminicola B. de Lesd. = *Punctelia graminicola*
 granulosa Lynge = *Montanelia disjuncta*
 hababiana Gyelnik = *Parmotrema hababianum*
 haitiensis Hale = *Parmotrema haitiense*
 halei Ahti = *Melanohalea halei*
 halseyana Tuck. (Fink 1935) = *Arctoparmelia centrifuga* (Hale & DePriest 1999, Esslinger & Tucker 2009)
 herreana Zahlbr. = *Flavoparmelia caperata*
 herrei Zahlbr. = *Parmotrema herrei*
 horrescens Taylor = *Hypotrachyna horrescens*
 huachucensis T. H. Nash = *Xanthoparmelia huachucensis*
 hubrichtii E. C. Berry = *Hypotrachyna minarum*
 hypoleucina J. Steiner = *Parmotrema hypoleucinum*
 hypoleucites Nyl. = *Punctelia hypoleucites*
 hypomelaena Hale = *Xanthoparmelia hypomelaena*
 hypopsila Müll. Arg. = *Xanthoparmelia hypopsila*, but North American records are *X. angustiphylla*

hypotropa Nyl. = Parmotrema hypotropum
 hypotropa var. sorediata Müll. Arg. (Fink 1935) = Parmotrema hypotropum (Esslinger & Tucker 2009)
 hypotropoides Nyl. ex Willey = Parmotrema perforatum
 hypotrypodes (Nyl.) Willey (Fink 1935) Apparent orthographic error for P. hypotropoides (Esslinger & Tucker 2009)
 imbricatula Zahlbr. = Hypotrachyna imbricatula
 incorrupta J. P. Moore = Flavopunctelia praesignis
 incurva (Pers.) Fr. = Arctoparmelia incurva
 infrapallida Essl. = Xanthoparmelia infrapallida
 infumata Nyl. = Melanohalea infumata
 internexa Nyl. = Parmotrema internexum
 intestiniformis (Vill.) Ach. = Brodoa intestiniformis, but North American reports are B. oroarctica
 ioanis-simae Gyelnik = Xanthoparmelia taractica, but western North American records are probably Xanthoparmelia coloradoensis
 isidiata (Anzi) Gyelnik = Xanthoparmelia conspersa
 isidiosa (Müll. Arg.) Hale = misidentification for North America
 isidiotyla Nyl. = Xanthoparmelia loxodes
 joranadia T. H. Nash = Xanthoparmelia joranadia
 kernstockii (Lynge) Zahlbr. = Flavopunctelia flaventior
 kerguelensis A. Wilson = chemotype of Parmelia saxatilis
 kerguelensis auct. N. Am. = Parmelia pseudosulcata
 kurokawae Hale = Xanthoparmelia lavicola
 laciniatula (Flagey) Zahlbr. (Eyderdam 1960) = misidentification for North America
 laevigata (Sm.) Ach. = Hypotrachyna laevigata
 laevigatula Nyl. = Bulbothrix laevigatula
 lanata (L.) Wallr. = Pseudephebe pubescens
 latissima Fée = Parmotrema latissimum, but reports are a misidentification for North America.
 lecanorica Hale = Xanthoparmelia lecanorica, but reports are a misidentification for North America
 leucochlora Tuck. = Pseudoparmelia cubensis
 lineola E. C. Berry = Xanthoparmelia lineola
 livida Taylor = Hypotrachyna livida
 lobulifera Degel. = Hypotrachyna imbricatula
 lobulifera var. insensitiva Degel. = Hypotrachyna ensifolia
 lobulifera var. luteoreagens Degel. = Hypotrachyna imbricatula
 lobulifera var. sanguineoreagens Degel. = Hypotrachyna prolongata
 lophyrea Ach. (Fink 1935) = Hypogymnia lophyrea
 louisianae Hale = Parmotrema louisianae
 loxodes Nyl. = Xanthoparmelia loxodes
 madagascariacea (Hue) Abbayes = Parmotrema xanthinum (Lendemer 2016a)
 mandshurica Asahina = Flavopunctelia soredica
 margaritata Hue = Parmotrema margaritatum
 martinicana Nyl. = Canoparmelia martinicana
 maxima Hue = Parmotrema stuppeum
 mellissii C. W. Dodge = Parmotrema mellissii
 mesogens Nyl. (Fink 1935) Apparent typographic error for P. mesogenes Nyl = Parmotrema mesogenes, a misidentification for North America (Esslinger & Tucker 2009)
 metarevoluta Asahina = Myelochroa metarevoluta
 mexicana Gyelnik = Xanthoparmelia mexicana
 michauxiana Zahlbr. = Parmotrema submarginale
 molliuscula Ach. = misidentification for North America
 monticola J. P. Dey = Xanthoparmelia monticola
 mordenii Hale = Parmotrema mordenii
 mougeotii Schaerer = Xanthoparmelia mougeotii
 multispora A. Schneider = Melanohalea multispora
 negativa Gyelnik = Flavoparmelia caperata
 neoconspersa Gyelnik = Xanthoparmelia neoconspersa

nigropsoromifera T. H. Nash = *Xanthoparmelia nigropsoromifera*
njalensis C. W. Dodge = *Bulbothrix scortella*
novomexicana Gyelnik = *Xanthoparmelia novomexicana*
obsessa Ach. = *Myelochroa obsessa*
occidentalis Essl. = *Xanthoparmelia occidentalis*
olivacea (L.) Ach. = *Melanohalea olivacea*
olivaceoides Krog = *Melanohalea olivaceoides*
olivaria (Ach.) Th. Fr. = *Cetrelia olivetorum*
olivetorum Nyl. = *Cetrelia olivetorum*
omphalodes subsp. glacialis Skult = *P. skultii*
omphalodes subsp. pinnatifida (Kurok.) Skult = *P. pinnatifida*
oncodes Tuck. (Fink 1935) Name not located in any available source (Esslinger & Tucker 2009)
oostingii J. P. Dey = *Hypotrachyna oostingii*
oregana Gyelnik = *Hypogymnia physodes*
panniformis (Nyl.) Vainio = *Montanelia panniformis*
perfoliata (Jacq.) Ach. (Mohr 1901) = misspelling of *P. perforata*
perforata (Jacq.) Ach. = *Parmotrema perforatum*
perlata (Hudson) Ach. = *Parmotrema perlatum*
permaculata Hale = *Parmotrema eurysacum*
perreticulata (Räsänen) Hale = *Punctelia perreticulata*
pertusa (Schränk) Schaerer = *Menegazzia terebrata*
phaea Tuck. (Fink 1935) = *Physcia phaea*
physodes (L.) Ach. = *Hypogymnia physodes*
piedmontensis Hale = *Xanthoparmelia piedmontensis*
plittii Gyelnik = *Xanthoparmelia plittii*
praesignis Nyl. = *Flavopunctelia praesignis*
praesorediosa Nyl. = *Parmotrema praesorediosum*
preperforata W. L. Culb. = *Parmotrema preperforatum*
proboscidea Tayl. (Fink 1935) = *Parmotrema crinitum* (Hale & DePriest 1999)
producta (Hale) J. P. Dey = *Hypotrachyna producta*
prolixa (Ach.) Carroll = *Neofuscia pulla*, but a misidentification for North America.
prolongata Kurok. = *Hypotrachyna prolongata*
pseudoborreri Asahina = *Punctelia borreri*
psoromifera Kurok. = *Xanthoparmelia psoromifera*
pubescens (L.) Vainio = *Pseudephebe pubescens*
pulla Ach. = *Xanthoparmelia pulla* (Ach.) Crespo et al., but a misidentification for North America
pulvinata Fée = *Hypotrachyna pulvinata*
pustulifera Hale = *Hypotrachyna pustulifera*
pustulosa Essl. = *Xanthoparmelia pustulosa*
quercina (Willd.) Vainio North American reports are *Parmelina coleae*
rachista Hale = *Hypotrachyna prolongata*
rampoddensis Nyl. = *Parmotrema rampoddense*
recipienda Nyl. = *Parmotrema subcaperatum* (Kremp.) Hale., but a misidentification for North America
reddenda Stirton = *Punctelia reddenda*
relicina Fr. = *Relicina relicinula* (Müll. Arg.) Hale, but a misidentification for North America
reparata Stirton = *Parmotrema cetratum*
reticulata Taylor = *Parmotrema reticulatum*
revoluta Flörke = *Hypotrachyna revoluta*
rigida Lynge = *Parmotrema subrigidum* (N. Am. records only)
robusta Degel. = *Parmotrema robustum*, but North American records are *Parmotrema gardneri*
rockii Zahlbr. = *Hypotrachyna rockii*
rudecta Ach. = *Punctelia rudecta*
rutidota Hooker f. & Taylor = *Flavoparmelia rutidota*
salacinifera Hale = *Canoparmelia salacinifera*
santae-crucis Vainio = *Parmotrema praesorediosum*
saximontana R. A. Anderson & W. A. Weber = *Montanelia saximontana*

scortea (Ach.) Ach. (Fink 1935) = *Parmelina tiliacea* (Hoffm.) Hale, but an apparent misidentification for North America
 scortella Nyl. = *Bulbothrix scortella*
 semansiana W. L. Culb. & C. F. Culb. = *Punctelia graminicola*
 separata Th. Fr. = *Arctoparmelia separata*
 septentrionalis (Lyng.) Ahti = *Melanohalea septentrionalis*
 sibirica Zahlbr. = *Allantoparmelia sibirica*
 silvestris Degel. = *Myelochroa aurulenta*
 simulans Hale = *Parmotrema simulans*
 sinuosa (Sm.) Ach. = *Hypotrachyna sinuosa*
 sipeana Gyelnik = *Menegazzia terebrata*
 sorediata (Ach.) Th. Fr. = *Montanelia sorediata*
 soredica Nyl. = *Flavopunctelia soredica*
 sorediosa Almb. = *Montanelia sorediata*
 sorocheila Vainio = *Hypotrachyna sorocheila*, but North American records apparently refer to *E. catawbiense*
 sphaerospora Nyl. (North American records) = *Pseudoparmelia uleana*
 sphaerosporella Müll. Arg. = *Ahtiana sphaerosporella*
 spumosa Asahina = *Parmelinopsis spumosa*
 stenophylla (Ach.) Du Rietz = *Xanthoparmelia stenophylla*
 stictica (Duby) Nyl. = *Punctelia stictica*
 stuppea Taylor = *Parmotrema stuppeum*
 stygia (L.) Ach. = *Melanelia stygia*
 subargentifera Nyl. = *Melanelixia subargentifera*
 subarnoldii Abbayes = *Parmotrema subarnoldii*, but a misidentification for North America north of Mexico
 subaurifera Nyl. = *Melanelixia subaurifera*
 subcapitata Nyl. ex Hasse = *Flavoparmelia subcapitata*
 subcentrifuga Oxner = *Arctoparmelia subcentrifuga*
 subcrinita auct. = *Parmotrema ultralucens*
 subcrinita Nyl. = *Parmotrema subtinctorium*
 subdecepiens Vainio = *Xanthoparmelia subdecepiens*
 subelegantula Essl. = *Melanohalea subelegantula*
 subhosseana Essl. = *Xanthoparmelia subhosseana*
 subinvoluta Hale = *Parmotrema rampoddense*
 subsidiosa (Müll. Arg.) C. W. Dodge = *Parmotrema subsidiosum*
 sublaevigata (Nyl.) Nyl. = *Hypotrachyna sublaevigata*, but a misidentification for North America (Hale 1979)
 submarginalis (Michaux) Nyl. (Fink 1935) = *Parmotrema submarginale* (Hale & DePriest 1999)
 subobscura Vainio = *Hypogymnia subobscura*
 subolivacea Nyl. = *Melanohalea subolivacea*
 subpraesignis Nyl. = *Punctelia subpraesignis*
 subquercifolia Hue = *Myelochroa galbina*
 subramigera Gyelnik = *Xanthoparmelia subramigera*
 subrudecta Nyl. = *Punctelia subrudecta* (Nyl.) Krog, but a misidentification for North America (Lendemer & Hodkinson 2010)
 subrugata Kremp. = misidentification for North America
 substygia Räsänen North American reports are *Montanelia saximontana* or *M. secwepemc*
 subsumpta Nyl. = *Parmotrema subsumptum*
 subtinctoria Zahlbr. = *Parmotrema subtinctorium*
 sulphurata Nees & Flotow = *Parmotrema sulphuratum*
 sulphorosa (Tuck.) Fink (Fink 1935) = *Myelochroa galbina* (Hale & DePriest 1999)
 swinscowii Hale = *Parmelinopsis swinscowii*
 taractica Kremp. = *Xanthoparmelia taractica*, but see note there
 tasmanica Hooker f. & Taylor = *Xanthoparmelia tasmanica*
 texana Tuck. = *Canoparmelia texana*

thysanota Kurok. = Hypotrachyna thysanota
 tinctina Maheu & A. Gillet = Xanthoparmelia tinctina, but not found in North America
 tinctorum Delise ex Nyl. = Parmotrema tinctorum
 trabeculata Ahti = Melanohalea trabeculata
 trichotera Hue = Parmotrema perlatus
 tuberculata Gyelnik = Xanthoparmelia novomexicana
 tubulosa (Schaerer) Bitter = Hypogymnia tubulosa
 tucsonensis T. H. Nash = Xanthoparmelia tucsonensis
 uleana Müll. Arg. = Pseudoparmelia uleana
 ulophyllodes (Vainio) Savicz = Flavopunctelia soledica
 ultralucens Krog = Parmotrema ultralucens
 verruculifera Nyl. = Xanthoparmelia verruculifera
 virginica Hale = Hypotrachyna virginica
 vittata (Ach.) Röhl. = Hypogymnia vittata
 weberi Hale = Xanthoparmelia weberi
 wyomingica (Gyelnik) Hale = Xanthoparmelia wyomingica
 xanthina (Müll. Arg.) Vainio = Parmotrema xanthinum
 xanthomela Nyl. (Fink 1935) Typographic error for P. xanthomyela = Hypotrachyna endochlora
 (Leighton) Hale, a misidentification for North America
 zollingeri Hepp = Parmotrema zollingeri

PARMELIELLA Müll. Arg.

appalachensis P. M. Jørg. (Jørgensen 2000c)
corallinoides (Hoffm.) Zahlbr.
pannosa (Sw.) Nyl. Syn.: Pannaria pannosa
parvula P. M. Jørg. (Jørgensen 2000c)
runderatula (Nyl.) Hasse
triptophylla (Ach.) Müll. Arg. Syn.: Pannaria triptophylla
 arctophila (Th. Fr.) Malme = Santessoniella arctophila (Henssen 1997)
 cheiroloba Müll. Arg. = Fuscopannaria cheiroloba
 crossophylla (Tuck.) G. Merr. & Burnham = Santessoniella crossophylla
 cyanolepra (Tuck.) Herre = Fuscopannaria cyanolepra
 mariana (Fr.) P. M. Jørg. & D. J. Galloway = Lepidocollema marianum (Ekman et al. 2014)
 lepidiota (Sommerf.) Vainio = Fuscopannaria praetermissa
 microphylla "(Sw.)" Müll. Arg. = Vahliella leucophaea
 plumbea (Lightf.) Vainio = Pectenium plumbea (Ekman et al. 2014)
 praetermissa (Nyl.) P. James = Fuscopannaria praetermissa
 saubinetii (Mont.) Zahlbr. = Vahliella saubinetii
 stellata (Tuck.) Zahlbr. = Coccocarpia stellata
 stylophora (Vainio) P. M. Jørg. (Jørgensen 2000c) = Lepidocollema stylophorum (Ekman et al. 2014)

PARMELINA Hale

coleae Argüello & A. Crespo (Argüello et al. 2007a, 2007b)
yalungana (Zahlbr.) P. R. Nelson & Kepler (Nelson et al. 2013)
 antillensis (Nyl.) Hale = Parmotrema antillensis
 aurulenta (Tuck.) Hale = Myelochroa aurulenta
 dissecta (Nyl.) Hale = Hypotrachyna minarum
 galbina (Ach.) Hale = Myelochroa galbina
 horrescens (Taylor) Hale = Hypotrachyna horrescens
 metarevoluta (Asahina) Hale = Myelochroa metarevoluta
 minarum (Vainio) Skorepa = Hypotrachyna minarum
 obsessa (Ach.) Hale = Myelochroa obsessa
 quercina (Willd.) Hale North American reports are P. coleae
 spumosa (Asahina) Hale = Hypotrachyna spumosa
 swinscowii (Hale) Hale = Hypotrachyna swinscowii
 tiliacea (Hoffm.) Hale North American reports are misidentifications

PARMELINOPSIS Elix & Hale = **HYPOTRACHYNA** (Divakar et al. 2013)

cryptochlora (Vainio) Elix & Hale = *Hypotrachyna cryptochlora*
horrescens (Taylor) Elix & Hale = *Hypotrachyna horrescens*
minarum (Vainio) Elix & Hale = *Hypotrachyna minarum*
spumosa (Asahina) Elix & Hale = *Hypotrachyna spumosa*
swinscowii (Hale) Elix & Hale = *Hypotrachyna swinscowii*

PARMELIOPSIS Nyl.

ambigua (Wulfen) Nyl. Syn.: *Foraminella ambigua*
capitata R. C. Harris ex J. W. Hinds & P. L. Hinds (Hinds & Hinds 1998)
esorediata (Degel.) Nordnes (McCarthy et al. 2012)
hyperopta (Ach.) Arnold Syn.: *Foraminella hyperopta*
subambigua Gyelnik Syns.: *Foraminella subambigua*
aleurites (Ach.) Nyl. = *Imshaugia aleurites*
diffusa (Weber) Riddle = *P. hyperopta*
halei (Tuck.) Hale = *P. subambigua*
placorodia (Ach.) Nyl. = *Imshaugia placorodia*

PARMENTARIA Fée = **PYRENULA**

astroidea Fée = *Pyrenula astroidea*
[*Pleurotheliopsis australiensis* (Müll. Arg.) Zahlbr.] = ?
nana (Zahlbr.) R. C. Harris = *Anthracotheccium nanum*
rappii Zahlbr. = *Pyrenula leucostoma* Ach.
ravenelii (Tuck.) Müll. Arg. = *Pyrenula ravenelii*

PARMOTREMA A. Massal.

arnoldii (Du Rietz) Hale Syn.: *Parmelia arnoldii*
austrosinense (Zahlbr.) Hale Syn.: *Parmelia austrosinensis*
cetratum (Ach.) Hale Syns.: *Parmelia cetrata*, *P. herrei*, *Rimelia cetrata* (Blanco et al. 2005)
commensuratum (Hale) Hale Syns.: *Parmelia commensuratum*, *Rimelia commensuratum*
conferendum Hale Syns.: *Canomaculina conferenda*, *Rimeliella conferenda*
crinitum (Ach.) M. Choisy Syn.: *Parmelia crinita*, *Parmelia proboscidea*
cristiferum (Taylor) Hale Syn.: *Parmelia cristifera*
despectum Kurok. (Kurokawa 2001)
diffractaicum (Essl.) Hale Syns.: *Parmelia diffractaica*, *Rimelia diffractaica*
dilatatum (Vainio) Hale Syn.: *Parmelia dilatata*
dominicanum (Vainio) Hale Syn.: *Parmelia dominicana*
endosulphureum (Hillm.) Hale Syn.: *Parmelia endosulphurea*
eurysacum (Hue) Hale Syns.: *Parmelia eurysaca*, *P. permaculata*
gardneri (C. W. Dodge) Sérus. Syn.: *Parmelia robusta*
hababianum (Gyelnik) Hale Syn.: *Parmelia hababiana*
haitiense (Hale) Hale Syns.: *Parmelia haitiensis*, *Canomaculina haitiensis*
herrei (Zahlbr.) Spielmann & Marcelli (Marcelli et al. 2011)
hypoleucinum (J. Steiner) Hale Syn.: *Parmelia hypoleucina*
hypotropum (Nyl.) Hale Syns.: *Parmelia hypotropa*, *Parmelia hypotropa* var. *sorediata*, *P. cetrata* var. *hypotropoides*
internexum (Nyl.) Hale Syn.: *Parmelia internexa*
louisianae (Hale) Hale Syn.: *Parmelia louisianae*
margaritatum (Hue) Hale Syn.: *Parmelia margaritata*
mellissii (C. W. Dodge) Hale Syn.: *Parmelia mellissii*
mordenii (Hale) Hale Syn.: *Parmelia mordenii*
neotropicum Kurok. ex Hale Syns.: *Canomaculina neotropica*, *Rimeliella neotropica*
perforatum (Jacq.) A. Massal. Syns.: *Parmelia perforata*, *P. erecta*, *P. hypotropoides*
perlatus (Hudson) M. Choisy Syns.: *Parmelia perlata*, *P. trichotera*
praesorediosum (Nyl.) Hale Syns.: *Parmelia praesorediosa*, *P. santae-crucis*
preperforatum (W. L. Culb.) Hale Syn.: *Parmelia preperforata*

rampoddense (Nyl.) Hale Syns.: *Parmelia rampoddensis*, *P. subinvoluta*
reticulatum (Taylor) M. Choisy Syns.: *Parmelia reticulata*, *Rimelia reticulata*
rubifaciens (Hale) Hale
simulans (Hale) Hale Syns.: *Parmelia simulans*, *Rimelia simulans*
stuppeum (Taylor) Hale Syns.: *Parmelia stuppea*, *P. claudelii*, *P. maxima*
subisidiosum (Müll. Arg.) Hale Syns.: *Parmelia subisidiosa*, *Rimelia subisidiosa*
submarginale (Michaux) DePriest & B. Hale Syns.: *Parmelia michauxiana*, *P. epiclada* (DePriest & Hale 1998), *P. submarginalis*
subrigidum Egan (Egan et al. 2005)
subsumptum (Nyl.) Hale Syns.: *Canomaculina subsumpta*, *Rimeliella subsumpta*, *Parmelia subsumpta*
subtinctorium (Zahlbr.) Hale Syns.: *Canomaculina subtinctoria*, *Rimeliella subtinctoria*, *Parmelia subtinctoria*
sulphuratum (Nees & Flotow) Hale Syn.: *Parmelia sulphurata*
tinctorum (Delise ex Nyl.) Hale Syn.: *Parmelia tinctorum*
ultralucens (Krog) Hale Syns.: *Parmelia ultralucens*, *P. subcrinita* auct. non Nyl.
wrightii L. I. Ferraro & Elix (Seavey & Seavey 2012)
xanthinum (Müll. Arg.) Hale Syns.: *Parmelia xanthina*, *P. chrysantha*, *P. madagascariacea*
zollingeri (Hepp) Hale Syn.: *Parmelia zollingeri*
 chinense (“Osbeck”) Hale & Ahti = *P. perlatum* (Hawksworth 2004)
 crozalsianum (B. de Lesd. ex Harm.) Hawksworth = *Crespoa crozalsiana* (Lendemer & Hodgkinson 2012)
 madagascariaceum (Hue) Hale = *P. xanthinum* (Lendemer 2016a)
 michauxianum (Zahlbr.) Hale = *P. submarginale*
 ochrocrinitum Elix & J. Johnst. Erroneously mapped for North America (Michlig & Ferraro 2010)
 rigidum (Lynge) Hale North American records are *P. subrigidum*
 robustum (Degel.) Hale North American records are *P. gardneri*

PARMOTREMOPSIS Elix & Hale

antillensis (Nyl.) Elix & Hale Syns.: *Parmelina antillensis*, *Parmelia antillensis*

PARMULARIA Nilson

brouardii B. de Lesd. = a *Lecanora* sp.
 novomexicana B. de Lesd. = Identity uncertain

PARVOPLACA Arup, Søchting & Frödén (Arup et al. 2013)

nigroblastidiata Arup, Halici & Vondrák (Arup et al. 2015)
tirolensis (Zahlbr.) Arup, Søchting & Frödén Syn.: *Caloplaca subolivacea*, *C. tirolensis*

PATRICIOMYCES D. Hawksw.

***valentinianus** D. Hawks. (Cole & D. Hawksworth 2001)

PAULIA Fée

pyrenoides (Nyl.) Henssen Syn.: *Thyrea pyrenoides*

PECCANIA A. Massal. ex Arnold

arizonica Tuck. ex Herre
kansana (Tuck.) Forssell Syn.: *Omphalaria kansana*
kansuensis (H. Magn.) M. Schultz ined. (McCune et al. 2014b)
subnigra (B. de Lesd.) Wetmore Syns.: *Placynthium subnigrum*, *Synalissa subnigra*
texana (Tuck.) Wetmore Syn.: *Synalissa texana*
tiruncula (Nyl.) Henssen (Tretiach & Schultz 2007)

PELTIGERA Willd.

aphthosa (L.) Willd.
aquatica Miadl. & Lendemer (Miadlikowska et al. 2014b)
britannica (Gyelnik) Holt.-Hartw. & Tønsberg

canina (L.) Willd.
castanea Goward, Goffinet & Miądl. (Goffinet et al. 2003)
chionophila Goward & Goffinet (Goward & Goffinet 2000)
cinnamomea Goward
collina (Ach.) Schrader
degenii Gyelnik
didactyla (With.) J. R. Laundon
elisabethae Gyelnik
evansiana Gyelnik
extenuata (Nyl. ex Vainio) Lojka (Goffinet et al. 2003)
fibrilloides (Gyelnik) Vitik. (Vitikainen 2004)
frippii Holt.-Hartw. (Vitikainen 1994)
gowardii Lendemer & H. O'Brien (Lendemer & O'Brien 2011)
horizontalis (Hudson) Baumg.
hydrothyria Miądl. & Lutzoni Syn.: *Hydrothyria venosa* (Miądlukowska & Lutzoni 2000)
hymenina (Ach.) Delise
kristinssonii Vitik.
latiloba Holt.-Hartw. (Holtan-Hartwig 2005)
lepidophora (Nyl. ex Vainio) Bitter
leucophlebia (Nyl.) Gyelnik
lyngei Gyelnik (Dillman et al. 2012)
malacea (Ach.) Funck
membranacea (Ach.) Nyl.
monticola Vitik. (Vitikainen 2004)
neckeri Hepp ex Müll. Arg.
neopolydactyla (Gyelnik) Gyelnik
pacifica Vitik.
phyllidiosa Goffinet & Miądl. (Goffinet & Miądlukowska 1999)
polydactylon (Necker) Hoffm.
ponojensis Gyelnik
praetextata (Flörke ex Sommerf.) Zopf
retifoveata Vitik.
rufescens (Weiss) Humb.
scabrosa Th. Fr.
scabrosella Holt.-Hartw.
tartarea (Llano) Vitik. (Vitikainen 2006)
venosa (L.) Hoffm.
 aphthosa f. complicata (Th. Fr.) Zahlbr. = *P. leucophlebia*
 aphthosa var. variolosa A. Massal. = *P. leucophlebia*
 avenosa Gyeln
 canina var. rufescens (Weiss) Mudd = *P. rufescens*
 canina var. rufescens f. innovans (Körber) J. W. Thomson = *P. praetextata*
 canina var. spuria (Ach.) Schaerer = *P. didactyla*
 didactyla var. extenuata (Nyl. ex Vainio) Goffinet & Hastings (Goffinet & Hastings 1995) = *P. extenuata*
 dolichorrhiza (Nyl.) Nyl. = *P. polydactylon*
 erumpens (Taylor) Elenkin = *P. didactyla*
 hazslinszkyi Gyelnik = *P. extenuata*
 horizontalis (Hudson) Baumg. f. zopfii (Gyelnik) J. W. Thomson This name has often been used for *P. elisabethae*
 lactucifolia (With.) J. R. Laundon = *P. hymenina*
 occidentalis sensu Kristinsson = *P. kristinssonii*
 occidentalis (E. Dahl) Kristinsson = *P. neopolydactyla*
 polydactyla var. hymenina (Ach.) Flotow = *P. hymenina*
 polydactyla var. neopolydactyla Gyelnik = *P. neopolydactyla*
 praecanina Gyelnik (Gyelnik 1931) no type designated, identity uncertain

pulverulenta (Taylor) Kremp. = *P. scabrosa* Th. Fr. for North American records
scutata (Dickson) Duby = *P. collina*
sorediata (Schaerer) Fink (Fink 1935) = *P. didactyla* (Vitikainen 1994)
spuria (Ach.) DC. = *P. didactyla*
variolosa (A. Massal.) Gyelnik = *P. leucophlebia*
zopfii Gyelnik (Fink 1935) = *P. horizontalis* (Vitikainen 1994)

PELTULA Nyl.

bolanderi (Tuck.) Wetmore Syn.: *Heppia bolanderi*
clavata (Kremp.) Wetmore
corticola Büdel & R. Sant. (Büdel et al. 2007)
cylindrica Wetmore
euploca (Ach.) Poelt ex Ozenda & Clauzade Syns.: *Heppia euploca*, *H. guepinii*, *H. polyphylla*
farinosa Büdel (Büdel & Nash 2002)
michoacanensis (B. de Lesd.) Wetmore
obscurans (Nyl.) Gyelnik var. **obscurans**
obscurans var. **deserticola** (Zahlbr.) Wetmore Syn.: *Heppia deserticola*
obscurans var. **hassei** (Zahlbr.) Wetmore Syn.: *Heppia hassei*
omphaliza (Nyl.) Wetmore
patellata (Bagl.) Swinscow & Krog Syn.: *Heppia leptopholis*, *H. polyspora*, *H. terrena*
placodizans (Zahlbr.) Wetmore Syn.: *Heppia placodizans*
psammophila (Nyl.) Egea (Büdel & Nash 2002)
radicata (Ach.) Nyl.
richardsii (Herre) Wetmore Syn.: *Heppia richardsii*
sonorensis Büdel & T. H. Nash
tortuosa (Nees) Wetmore Syn.: *Heppia tortuosa*
zahlbruckneri (Hasse) Wetmore Syn.: *Heppia zahlbruckneri*
polyspora (Tuck.) Wetmore = *P. patellata*

PERFORARIA Müll. Arg. = **COCCOTREMA**
minuta Degel. = *Coccotrema pocillarium*

PERIDIOTHELIA D. Hawksw.

⁺**fuliguncta** (Norman) D. Hawksw. (Aptroot 2002d)
⁺**grandiuscula** (Anzi) D. Hawksw.

PERIGRAPHA Hafellner

^{*}**superveniens** (Nyl.) Hafellner (Diederich 2003)

PERTUSARIA DC.

alaskensis Erichsen
albescens (Hudson) M. Choisy & Werner
alpina Hepp ex Ahles
andersonii Lendemer (Lendemer 2009c)
appalachensis Lendemer, R. C. Harris & Elix (Lendemer et al. 2008a)
atra Lynge
azulensis B. de Lesd. (Lumbsch & Nash 1999)
borealis Erichsen
brattiae Lumbsch & T. H. Nash (Lumbsch & Nash 1999)
bryontha (Ach.) Nyl.
californica Dibben
carneopallida (Nyl.) Anzi
chiodectonoides Bagl. ex A. Massal.
coccodes (Ach.) Nyl. (Tønsberg 1999a)
commutata Müll. Arg. (Lücking et al. 2011b)
consocians Dibben

copiosa Erichsen
coriacea (Th. Fr.) Th. Fr.
dactylina (Ach.) Nyl.
epixantha R. C. Harris
excludens Nyl.
expolita R. C. Harris
flavicunda Tuck.
flavocorallina Coppins & Muhr
floridana Dibben
geminipara (Th. Fr.) C. Knight ex Brodo Syn.: *Ochrolechia geminipara*
glaucomela (Tuck.) Nyl. Syn.: *Lecanora glaucomela*
globularis (Ach.) Tuck.
glomerata (Ach.) Schaerer
hakkodensis Yasuda ex Räsänen
hymenea (Ach.) Schaerer
hypothamnolica Dibben
iners R. C. Harris
islandica Bratt, Lumbsch & Schmitt (Schmitt et al. 2006)
lecanina Tuck.
leioplaca DC.
macounii (I. M. Lamb) Dibben Syn.: *Melanaria macounii*
mariae B. de Lesd. (Lumbsch & Nash 1999)
mccroryae Björk, Goward & T. Sprib. (Spribille et al. 2010)
moreliensis B. de Lesd. (Nash et al. 1998)
neolecania Lumbsch & T. H. Nash (Lendemer et al. 2013)
neoscotica I. M. Lamb
obruta R. C. Harris
occidentalis Bratt, Lumbsch & Schmitt (Schmitt et al. 2006)
octomela (Norman) Erichsen
oculata (Dickson) Th. Fr.
ostiolata Dibben
panyrga (Ach.) A. Massal.
papillata (Ach.) Tuck.
paratuberculifera Dibben
plittiana Erichsen
propinqua Müll. Arg.
pruinifera Erichsen
pseudocorallina (Lilj.) Arnold
pupillaris (Nyl.) Th. Fr.
pustulata (Ach.) Duby
rhexostoma Nyl.
rubefacta Erichsen
saximontana Wetmore
sinusmexicani Dibben
sommerfeltii (Flörke ex Sommerf.) Fr.
stenhammarii Hellbom
subambigens Dibben
subdactylina Nyl.
subobducens Nyl.
suboculata Brodo & Dibben
subpertusa Brodo
sulcata Dibben
tejocotensis B. de Lesd. (Lumbsch et al. 1999)
tetrathalamia (Fée) Nyl.
texana Müll. Arg.
trochiscea Norman

valliculata Dibben
ventosa Malme
virensica R. C. Harris
wulfenioides B. de Lesd.
xanthodes Müll. Arg.
zeorina Erichsen
 aleutensis Erichsen = *P. alaskensis*
 amara (Ach.) Nyl. = *Variolaria amara*
 amara var. *flotowiana* (Flörke) Vainio = *Variolaria amara*, at least for Europe
 ambigens (Nyl.) Tuck. = *P. subambigens*, for North American records
 arizonica Dibben = *P. tejocotensis*
 bryophaga Erichsen = *Ochrolechia bryophaga*
 canadensis Stirton = *P. pustulata*
 ceuthocarpa (Sm.) Turner & Borrer = *P. excludens*
 ceuthocarpoides Zahlbr. = *P. excludens*
 communis DC. (Mohr 1901) = *P. pertusa*, a misidentification for North America
 concentrica Erichsen Type not found. May be *Variolaria multipunctoides*
 coriacea var. *obducens* (Nyl.) Vainio = *P. coriacea*
 diffusilis Erichsen = *P. glomerata*
 diluta Björk, G. Thor & T. B. Wheeler (Spribille et al. 2009) = *Gyalectaria diluta*
 discoidea (Pers.) Malme = *P. albescens*
 disticha Erichsen = *P. texana* (Dibben 1980)
 finkii Zahlbr. ex Fink = *P. rhexostoma*
 flavida (DC.) J. R. Laundon = a European taxon, not in North America
 freyi Erichsen = *Megaspora verrucosa*
 globulifera (Turner) A. Massal. (Fink 1935) = *P. albescens* (Esslinger & Tucker 2009)
 granulata (Ach.) Müll. Arg. = *P. wulfenioides* for North American records
 hemisphaerica (Flörke) Erichsen = a European taxon, not in North America
 hultenii Erichsen = *Ochrolechia subplicans* subsp. *hultenii*
 laevigata (Nyl.) Arnold non (Th. Fr.) Anzi = *Variolaria trachythallina*
 lecanina subsp. *nigra* Fink ex Hedrick = *Variolaria ophthalmiza*
 leioterella Erichsen = *P. macounii* for North American reports
 leucostoma (Ach.) A. Massal. = *P. leioplaca*
 lutescens (Hoffm.) Lamy = *P. flavida*, but not in North America
 marginata Nyl. = *P. propinqua*
 microsticta (Sm. & Sow.) Erichsen = *P. excludens*
 monogona Nyl. = *P. excludens* for North American records
 multipuncta (Turner) Nyl. = misidentification for North America
 multipunctoides Dibben = *Variolaria multipunctoides*
 nolens Nyl. = *P. chiodectonoides*
 ocellata (Wallr.) Körber = misidentification for North America
 ophthalmiza (Nyl.) Nyl. = *Variolaria ophthalmiza*
 pertusa (Weigel) Tuck. = misidentification for North America
 pocillum Cumm. (Eyerdam 1960) = apparent nomen nudum of uncertain identity
 protuberans (Sommerf. ex Th. Fr.) Th. Fr. = *P. carneopallida*
 pulchella Malme = *Varicellaria velata* (Archer & Messuti 1997)
 raesaenii Erichsen = misidentification for North America
 rhodoleuca Th. Fr. = *Ochrolechia rhodoleuca*
 rubescens Erichsen = *P. propinqua*
 santamonicae Dibben = *Varicellaria velata* (Archer & Messuti 1997)
 scutellaris (Schaerer) Hue (Fink 1935) = *P. albescens* (Esslinger & Tucker 2009)
 shenandoensis Hale & Dibben = *P. plittiana* (Lendemer & Harris 2012)
 subamplicata Nyl. Erroneous name created by typographic error, first appearing in Egan (1987)
 subplicans Nyl. = *Ochrolechia subplicans*
 subpupillaris Vězda = *P. glaucomela*
 tabuliformis Erichsen = *P. leioplaca*

taeniata Erichsen = *P. zeorina*
torquata Müll. Arg. = *P. propinqua*
trachydactyla Vainio = identity uncertain, possibly an *Ochrolechia* sp.
trachythallina Erichsen = *Variolaria trachythallina*
tuberculifera Nyl. = misidentification for North America; most specimens are *P. paratuberculifera*
tuckermanii Erichsen = *P. subobducens*
velata (Turner) Nyl. = *Varicellaria velata* (Schmitt et al. 2012)
waghornei Hulting = *Variolaria waghornei*
wulfenii DC. = *P. hymenea*
xanthostoma (Sommerf.) Fr. = *Ochrolechia xanthostoma*

PETRACTIS Fr.

clausa (Hoffm.) Kremp. (Dillman et al. 2012)
farlowii (Tuck. ex Nyl.) Vězda Syn.: *Gyalecta farlowii*

PEZIZELLA Fuckel

***epithallina** (W. Phillips & Plowr.) Sacc. (Diederich 2003)

PHACOGRAPHA Hafellner (Hafellner 2009)

***glaucomaria** (Nyl.) Hafellner Syns.: *Leciographa glaucomaria*, *Opegrapha glaucomaria*

PHACOPSIS Tul.

***cephalodioides** (Nyl.) Triebel & Rambold (Diederich 2003)
***doerfeltii** Alstrup & Scholz (Scholz 1998)
***fusca** (Triebel & Rambold) Diederich (Diederich 2003)
***oxyspora** (Tul.) Triebel & Rambold Syns.: *Abrothallus oxysporus*, *Lecidea oxyspora*, *Nesolechia oxyspora*
***thallicola** (A. Massal.) Triebel & Rambold Syn.: *Nesolechia thallicola*
***vulpina** Tul.
***huuskonenii** Räsänen = *Raesaenenia huuskonenii* (Divakar et al. 2015)
***oxyspora** var. *defecta* Triebel & Rambold = *P. oxyspora*
***oxyspora** var. *fusca* Triebel & Rambold = *P. fusca*

PHACOTHECIUM Trevisan

***varium** (Tul.) Trevisan Syn.: *Opegrapha physciaria* (Hafellner 2009)

PHAEOCALICIUM A.F.W. Schmidt

⁺**betulinum** (Nyl.) Tibell (Selva & Tibell 1999)
⁺**boreale** (Nyl.) Tibell (McCune et al. 2014b)
⁺**compressulum** (Nyl. ex Vainio) A.F.W. Schmidt Syn.: *Mycocalicium compressulum*
⁺**curtisii** (Tuck.) Tibell Syn.: *Calicium curtisii*
⁺**flabelliforme** Tibell (Selva & Tibell 1999)
⁺**matthewsianum** Selva & Tibell (Selva & Tibell 1999)
⁺**minutissimum** (G. Merr.) Selva Syns.: *Calicium minutissimum*, *Stenocybe minutissima* (Selva & Tibell 1999)
⁺**polyporaenum** (Nyl.) Tibell
⁺**populneum** (Brond. ex Duby) A.F.W. Schmidt Syn.: *Calicium populneum*
⁺**praecedens** (Nyl.) A.F.W. Schmidt
⁺**tremulicola** (Norrlin ex Nyl.) Tibell Syn. *Stenocybe tremulicola* (Tibell 1996; Selva & Tibell 1999)

PHAEOGRAPHINA Müll. Arg.

asteroides Fink = *Phaeographis asteroides*
caesiopruinosa (Fée) Müll. Arg. = *Platygramme caesiopruinosa*
columbina (Tuck.) Zahlbr. = *Fissurina columbina*
explicans Fink = *Leiorreuma explicans*
plurifera (Nyl.) Fink = *Platygramme caesiopruinosa*

quassiicola (Fée) Müll. Arg. = Thecaria quassiicola
scalpturata (Ach.) Müll. Arg. = Phaeographis scalpturata

PHAEOGRAPHIS Müll. Arg.

arthonioides (Vainio) Zahlbr.
asteroides (Fink) Lendemer Syn.: Phaeographina asteroides (Lendemer & Knudsen 2008b)
atromaculata (A. W. Archer) A. W. Archer (Lendemer & Knudsen 2008b)
brasiliensis (A. Massal.) Kalb & Matthes-Leicht (Archer 2006)
delicatula Common & Lücking (Lücking et al. 2011b)
dendritica (Ach.) Müll. Arg. Syn.: Graphis dendritica
dendriticella Müll. Arg.
erumpens (Nyl.) Müll. Arg.
flavescens Dal Forno & Eliasaro (Lücking et al. 2011b)
haematites (Fée) Müll. Arg.
inconspicua (Fée) Müll. Arg. (Lücking et al. 2011b)
intricans (Nyl.) Staiger Syn.: Sarcographa intricans (Staiger 2002)
inusta (Ach.) Müll. Arg.
leiogrammodes (Kremp.) Müll. Arg. (Lücking et al. 2011b)
lobata (Eschw.) Müll. Arg.
major (Kremp.) Lücking (Lücking et al. 2011b)
multicolor R. C. Harris
nylanderi (Vainio) Zahlbr. (Lücking et al. 2011b)
oricola Lendemer & R. C. Harris (Lendemer & Harris 2014a)
punctiformis (Eschw.) Müll. Arg.
scalpturata (Ach.) Staiger (Lücking et al. 2011b)
schizoloma (Müll. Arg.) Müll. Arg. (Lücking et al. 2011b)
smithii (Leighton) B. de Lesd. (Tønsberg 1999a)
subfulgurata (Nyl.) Zahlbr.
tortuosa (Ach.) Müll. Arg.
exaltata (Mont. & Bosch) Müll. Arg. = Leiorreuma exaltatum
eulectra (Tuck.) Zahlbr. = Graphis eulectra
lyellii (Sm.) Zahlbr. = misidentification for North America
patellula (Fée) Müll. Arg. (Fink 1935) = Leiorreuma patellulum
sericea (Eschw.) Müll. Arg. = Leiorreuma sericea
sexloculata Fink = P. arthonioides
subtigrina (Vainio) Zahlbr. = P. brasiliensis

PHAEOPHYSCIA Moberg

adiastola (Essl.) Essl. Syn.: Physcia adiaastola
ciliata (Hoffm.) Moberg Syn.: Physcia ciliata, P. obscura auct.
constipata (Norrlin & Nyl.) Moberg Syn.: Physcia constipata
decolor (Kashiw.) Essl.
endococcina (Körber) Moberg Syn.: Physcia endococcina, P. lithotodes, (?) P. columbiana
endococcinodes (Poelt) Essl. Syn.: Physcia endococcinodes
erythrocardia (Tuck.) Essl.
hirsuta (Mereschk.) Essl. Syn.: Physcia hirsuta
hirtella Essl.
hispidula (Ach.) Essl. Syn.: Physcia hispidula, P. setosa
insignis (Mereschk.) Moberg
kairamoi (Vainio) Moberg Syn.: Physcia kairamoi
leana (Tuck.) Essl. Syn.: Physcia leana
nigricans (Flörke) Moberg Syn.: Physcia nigricans
orbicularis (Necker) Moberg Syn.: Physcia orbicularis, P. virella
pusilloides (Zahlbr.) Essl. Syn.: Physcia pusilloides
rubropulchra (Degel.) Essl. Syn.: Physcia orbicularis f. rubropulchra, P. endochrysea, P. rubropulchra
sciastra (Ach.) Moberg Syn.: Physcia sciastra, P. lithotea

squarrosa Kashiw. (Moberg 1995) Syn: *Physcia lacinulata*, for North American records
cernohorskyi (Nádv.) Essl. = *P. hirsuta* (Esslinger 2004b)
chloantha (Ach.) Moberg = *Physciella chloantha*
imbricata sensu Esslinger (1978) = *P. squarrosa*
imbricata (Vainio) Essl. = *P. hispidula*
melanchra (Hue) Hale = *Physciella melanchra*
nepalensis (Poelt) D. D. Awasthi = *Physciella nepalensis*

PHAEOPYXIS Rambold & Triebel (Rambold & Triebel 1990)

***punctum** (A. Massal.) Rambold, Triebel & Coppins (Rambold & Triebel 1990)

PHAEORRHIZA H. Mayrhofer & Poelt

nimbosa (Fr.) H. Mayrhofer & Poelt Syn.: *Rinodina nimbosa*, *R. phaeocarpa*
sareptana (Tomin) H. Mayrhofer & Poelt

PHAEOSPORA Hepp ex Stein

***arctica** Horáková & Alstrup
***catolechiae** Zopf (Zhurbenko 2014)
***parasitica** (Lönnr.) Arnold
***rimosicola** (Leighton ex Mudd) Hepp ex Stein Syn.: *Pyrenulella endococcoidea*

PHAEOSPOROBOLUS D. Hawksw. & Hafellner

***alpinus** R. Sant., Alstrup & D. Hawksw. = *Lichenostigma alpinum* (Ertz et al. 2014)
***fellhanerae** R. C. Harris & Lendemer (Harris & Lendemer 2009) = *Lichenostigma fellhanerae* (Ertz et al. 2014)
***usneae** D. Hawksw. & Hafellner = *Lichenostigma maureri* (Ertz et al. 2014)

PHAEOTREMA Müll. Arg.

californicum (Tuck.) Zahlbr. = *Thelotrema californicum*
meiospermum (Nyl.) Müll. Arg. = *Melanotrema meiospermum*

PHARCIDIA Körber = **STIGMIDIUM**

***dispersa** (J. Lahm ex Körber) Winter ex Rabenh. = *Zwackhiomyces dispersus*
***ephebes** Henssen = *Stigmidium ephebes*
***epicymatia** (Wallr.) Winter = a *Stigmidium* spp.
***parva** Henssen (see *Stigmidium*)

PHLOEOPECCANIA J. Steiner (Schultz & Büdel 2005)

major Henssen ined. (Schultz & Büdel 2005)
pulvinulina J. Steiner (Schultz & Büdel 2005)

PHLYCTELLA Kremp.

andensis Nyl.

PHLYCTIDIA Müll. Arg.

ludoviciensis Müll. Arg. = *Phlyctis boliviensis*

PHLYCTIS Wallr.

agelaea (Ach.) Flotow
argena (Sprengel) Flotow
speirea G. Merr.
boliviensis Nyl. Syn.: *Phlyctidia ludoviciensis* (Lendemer & R. C. Harris 2014d)
ludoviciensis (Müll. Arg.) Lendemer (Lendemer 2005a) = *P. boliviensis*
willeyi Tuck. = *Leucodecton willeyi*

PHOEBUS R. C. Harris & Ladd (Harris & Ladd 2005, 2007)
hydrophobius R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

PHOMA Fr.

- ***caloplacae** D. Hawksw. (Lawrey et al. 2012)
- ***fuliginosa** M. S. Cole & D. Hawksw. (Hawksworth & Cole 2004)
- ***grumantiana** Zhurb. & Diederich (Diederich et al. 2007)
- ***lobariae** Diederich & Etayo (Hafellner et al. 2002)
- ***lobariicola** Alstrup (Spribille et al. 2010)
- ***peltigerae** (P. Karsten) D. Hawksw. (Zhurbenko & Laursen 2003)
- ***puncteliae** Diederich & Lawrey (Lawrey et al. 2012)
- ***cladoniicola** Diederich, Kocourk. & Etayo (Diederich et al. 2007) = *Didymocyrtis cladoniicola* (Ertz et al. 2015a)
- ***cytophora** (Vouaux) D. Hawks. (Cole & D. Hawksworth 2001) = *Briancoppinsia cytophora* (Diederich et al. 2012; Kocourkova et al. 2012)
- ***physciicola** Keissler (Alstrup & Cole 1998) = *Didymocyrtis epiphyscia* (Ertz et al. 2015a)
- ***xanthomendozae** Diederich & Freebury (Lawrey et al. 2012) = *Didymocyrtis xanthomendozae* (Ertz et al. 2015a)

PHRAGMONAEVIA Rehm

- ***fuckelii** Rehm = *Corticifraga fuckelii*

PHYLLISCUM Nyl.

- demangeonii** (Moug. & Mont.) Nyl. Syn.: *Thyrea demangeonii*
- tenue** Henssen

PHYLLOBLASTIA Vainio

- fortuita** Llop & Gómez-Bolea (Carlberg 2016)

PHYLLOPSORA Müll. Arg.

- breviuscula** (Nyl.) Müll. Arg. (Timdal 2011)
- buettneri** (Müll. Arg.) Zahlbr. (Timdal 2011)
- confusa** Swinscow & Krog
- corallina** (Eschw.) Müll. Arg. var. **corallina**
- furfuracea** (Pers.) Zahlbr. Syn.: *Lecidea furfuracea*
- glabella** (Nyl.) Gotth. Schneider
- glaucella** (Vainio) Timdal (Timdal 2008)
- halei** (Tuck.) Zahlbr. Syn.: *Pannaria halei*
- isidiotyla** (Vainio) Riddle (Brako 1991)
- kalbii** Brako (Brako 1991)
- labriformis** Timdal (Seavey & Seavey 2014a)
- lacerata** Timdal (Lücking et al. 2011b)
- ochroxantha** (Nyl.) Zahlbr. (Timdal 2008)
- parvifolia** (Pers.) Müll. Arg. var. **parvifolia** Syn.: *Biatora parvifolia*, *Lecidea parvifolia*
- parvifoliella** (Nyl.) Müll. Arg.
- porphyromelaena** (Vainio) Zahlbr. (Timdal 2011)
- rappiana** (Brako) Elix (Timdal 2011)
- santensis** (Tuck.) Swinscow & Krog (Timdal 2008) Syns.: *Bacidia microphyllina* auct., *Lecidea santensis*
- buettneri** (Müll. Arg.) Zahlbr. var. **glauca** (B. de Lesd.) Brako (Harris 1995a) = *P. porphyromelaena*
- buettneri** var. **munda** (Malme) Brako (Brako 1991) = *P. buettneri*
- canoumbrina** (Vainio) Brako Not known from North America; see note under *Bacidia subgranulosa*
- corallina** var. **glaucella** (Vainio) Brako (Brako 1991) = *P. glaucella*
- corallina** var. **ochroxantha** (Nyl.) Brako (Brako 1991) = *P. ochroxantha*
- corallina** var. **rappiana** Brako (Brako 1991) = *P. rappiana*
- corallina** var. **santensis** (Tuck.) Brako = *P. santensis*

parvifolia var. breviuscula (Nyl.) Brako (Brako 1991) = *P. breviuscula*
subcorallina Zahlbr. = *Catinaria subcorallina*
subfilamentosa Zahlbr. = *Lecidea subfilamentosa*

PHYSALOSPORA Niessl

*xanthoriae (Wedd.) Sacc. = misidentification for North America

PHYSCIA (Schreber) Michaux

adscendens (Fr.) H. Olivier
aipolia (Ehrh. ex Humb.) Fűrnr. var. **aipolia**
albinea (Ach.) Nyl.
alnophila (Vainio) Loht., Moberg, Myllys & Tehler (Lohtander et al. 2009)
americana G. Merr.
atrostriata Moberg
biziana (A. Massal.) Zahlbr.
caesia (Hoffm.) Hampe ex Fűrnr.
clementei (Sm.) Lynge
convexa Müll. Arg.
crispa Nyl. Many old records using this name are actually *P. atrostriata*
dakotensis Essl. (Esslinger 2004a)
dimidiata (Arnold) Nyl.
dubia (Hoffm.) Lettau
duplicorticata W. A. Weber & J. W. Thomson
erumpens Moberg (Moberg 1997)
halei J. W. Thomson
leptalea (Ach.) DC.
magnussonii Frey
mexicana B. de Lesd.
millegrana Degel.
montana B. de Lesd.
nashii Moberg (Moberg 1997)
neglecta Moberg (Tucker 2014)
neogaea R. C. Harris
phaea (Tuck.) J. W. Thomson Syn.: *Parmelia phaea*
poncinsii Hue (Harris 1995a)
pseudospeciosa J. W. Thomson
pumilior R. C. Harris
solistella Essl. & Egan (Esslinger & Egan 1996)
sorediosa (Vainio) Lynge
stellaris (L.) Nyl.
subalbinea Nyl. (Lohtander et al. 2009)
subtilis Degel.
tenella (Scop.) DC.
tenella subsp. **marina** (A. Nyl.) D. Hawksw.
tenellula Moberg (Moberg 1997)
tribacia (Ach.) Nyl.
undulata Moberg (Harris 1995a)
villosula Moberg (Tucker 2014)
adglutinata (Flörke) Nyl. = *Hyperphyscia adglutinata*
adiastola Essl. = *Phaeophyscia adiaastola*
aegialita (Afzel. ex Ach.) B. J. Moore = *Dirinaria aegialita*
aipolia var. alnophila (Vainio) Lynge = *P. alnophila*
alba (Fée) Müll. Arg. = misidentification for North America
alba var. obsessa (Mont.) J. W. Thomson = *P. integrata* Nyl., but a misidentification for North America
albicans sensu J. W. Thomson = *P. atrostriata* for North American reports
albicans (Pers.) J. W. Thomson = *Heterodermia albicans*

aquila (Ach.) Nyl. var. detonsa (Fr.) Tuck. (Claassen 1912) = *Anaptychia palmulata*
 aspera H. Magn. = *Dirinaria aegialita*
 astroidea (Clem.) Nyl. = *P. clementei*
 cainii Räsänen = *P. aipolia*
 callosa sensu Thomson (1963) = *P. tribacia* (Moberg 1997)
 callosa Nyl. = *P. phaea*
 cascadiensis H. Magn. = *P. phaea* (Moberg 1997)
 cernohorskyi Nád. = *Phaeophyscia cernohorskyi*
 chloantha (Ach.) Vainio = *Physciella chloantha*
 ciliata (Hoffm.) Du Rietz = *Phaeophyscia ciliata*
 columbiana B. de Lesd. = (?) *Phaeophyscia endococcina*, but the type not seen
 comosa (Eschw.) Nyl. = *Heterodermia comosa*
 constipata Norrlin & Nyl. = *Phaeophyscia constipata*
 convexella Moberg (Moberg 1997, in map) Erroneous report for the United States (Moberg 2002)
 culbersonii Thoms. (nomen nudum) = *Phaeophyscia squarrosa*
 detera (Nyl.) Nyl. = *Physconia detera*
 elaeina (Sm.) A. L. Sm. = *Hyperphyscia adglutinata*
 endochrysea (Hampe) Nyl. = *Phaeophyscia rubropulchra*
 endococcina (Körber) Th. Fr. = *Phaeophyscia endococcina*
 endococcinodes Poelt = *Phaeophyscia endococcinodes*
 fragilescens Zahlbr. = *P. soresdiosa*
 frostii (Tuck.) Zahlbr. = *Dirinaria frostii*
 grisea (Lam.) Zahlbr. = *Physconia grisea*, but a misidentification for North America
 hirsuta Mereschk. = *Phaeophyscia hirsuta*
 hispida auct. = *P. tenella*
 hispidula (Ach.) Frey = *Phaeophyscia hispidula*
 hypoleuca (Ach.) Tuck. = *Heterodermia hypoleuca*
 intermedia Vainio = *P. dubia*
 imbricata Vainio = *Phaeophyscia hispidula*
 isidiigera (Zahlbr.) Fink = *Physconia isidiigera*
 kairamoi Vainio = *Phaeophyscia kairamoi*
 lacinulata Müll. Arg. = *Phaeophyscia squarrosa*, for North American records
 leana (Tuck.) Tuck. = *Phaeophyscia leana*
 leucoleiptes (Tuck.) Lettau = *Physconia leucoleiptes*
 lithotea "(Ach.) Nyl." = *Phaeophyscia sciastra*
 lithotodes Nyl. = *Phaeophyscia endococcina*
 luganensis Mereschk. = *Physciella chloantha*
 melanchra Hue = *Physciella melanchra*
 melops Dufour = *P. phaea*
 minor (Fée) Vainio = *Hyperphyscia minor*
 muscigena (Ach.) Nyl. = *Physconia muscigena*
 nepalensis Poelt = *Physciella nepalensis*
 nigricans (Flörke) Stizenb. = *Phaeophyscia nigricans*
 obscura auct. = *Phaeophyscia ciliata*
 obscura var. endochrysea (Hampe) Nyl. (Claassen 1912) North American reports are *Phaeophyscia rubropulchra*
 obsessa (Mont.) Nyl. = *P. integrata*, but a misidentification for North America
 orbicularis (Necker) Poetsch = *Phaeophyscia orbicularis*
 orbicularis f. rubropulchra Degel. = *Phaeophyscia rubropulchra*
 picta (Sw.) Nyl. = *Dirinaria picta*
 pulverulenta auct. non (Schreber) Fűrnr. = *Physconia distorta*, but a misidentification for North America
 pusilloides Zahlbr. = *Phaeophyscia pusilloides*
 purpurascens Vainio = *Dirinaria purpurascens*
 rubropulchra (Degel.) Moberg = *Phaeophyscia rubropulchra*
 sciastra (Ach.) Du Rietz = *Phaeophyscia sciastra*
 semipinnata (J. F. Gmelin) Moberg = *P. leptalea*

setosa (Ach.) Nyl. = *Phaeophyscia hispidula*
 speciosa (Wulfen) Nyl. = *Heterodermia speciosa*
 subobscura Nyl. = *P. tenella* subsp. *marina*
 syncolla Tuck. ex Nyl. = *Hyperphyscia syncolla*
 teretiuscula (Ach.) Lynge = *P. dubia*
 tribacoides auct. non Nyl. = *P. americana*
 venusta (Ach.) Nyl. = *Physconia venusta*, but a misidentification for North America
 virella (Ach.) Flagey (Fink 1935) = *Phaeophyscia orbicularis*
 wainioi Räsänen = *P. subalbinea*
 wrightii Tuck. = North American report is *Heterodermia diademata* (Esslinger & Tucker 2009)

PHYSCIELLA Essl.

chloantha (Ach.) Essl. Syn.: *Physcia chloantha*, *P. luganensis*, *Phaeophyscia chloantha*
melanchra (Hue) Essl. Syn.: *Physcia melanchra*, *Phaeophyscia melanchra*
nepalensis (Poelt) Essl. Syn.: *Physcia nepalensis*, *Phaeophyscia nepalensis*

PHYSCIOPSIS M. Choisy = **HYPERPHYSCIA**

adglutinata (Flörke) M. Choisy = *Hyperphyscia adglutinata*
 elaeina (Sm.) Poelt = *Hyperphyscia adglutinata*
 minor (Fée) B. J. Moore = *Hyperphyscia minor*
 syncolla (Tuck. ex Nyl.) Poelt = *Hyperphyscia syncolla*

PHYSCONIA Poelt

americana Essl. (Esslinger 1994)
californica Essl. (Esslinger 2000b)
detersa (Nyl.) Poelt Syn.: *Physcia detersa*
elegantula Essl.
enteroxantha (Nyl.) Poelt
fallax Essl. (Esslinger 2000b)
grumosa Kashiw. & Poelt (Esslinger & Dillman 2010)
isidiigera (Zahlbr.) Essl.
isidiomuscigena Essl. (Esslinger 2000b)
leucoleiptes (Tuck.) Essl. Syn.: *Physcia leucoleiptes*
muscigena (Ach.) Poelt Syn.: *Physcia muscigena*
perisidiosa (Erichsen) Moberg
subpallida Essl.
 distorta (With.) J. R. Laundon = misidentification for North America
 farrea sensu Poelt = *P. perisidiosa* [*Parmelia farrea* Ach. = *Physconia grisea*]
 grisea (Lam.) Poelt = misidentification for North America
 kurokawae Kashiw. = *P. leucoleiptes* (Esslinger 2002d)
 pulverulacea Moberg = *P. distorta*, but a misidentification for North America
 pulverulenta auct. non (Schreber) Poelt = *P. distorta*, but a misidentification for North America
 thomsonii Essl. = *Anaptychia elbursiana*

PHYSMA A. Massal.

byrsaeum (Ach.) Müll. Arg. ("byrsinum")
cataractaecola B. de Lesd.
 luridum (Mont.) Tuck. = *Pannaria lurida*

PHYTOCONIS Bory

ericetorum (Pers. : Fr.) Redhead & Kuyper = *Lichenomphalia umbellifera*
 luteovitellina (Pilát & Nannf.) Redhead & Kuyper = *Lichenomphalia alpina*
 velutina (Quélet) Redhead & Kuyper = *Lichenomphalia velutina*
 viridis (Ach.) Redhead & Kuyper = *Lichenomphalia hudsoniana*

PICCOLIA A. Massal. (Hafellner 1995)

conspersa (Fée) Vainio Syn.: *Biatorella conspersa*, *Heterothecium conspersum* (Hafellner 1995)

nannaria (Tuck.) Lendemer & Beeching Syns.: *Biatorella nannaria*, *Heterothecium nannarium* (Knudsen & Lendemer 2007)

ochrophora (Nyl.) Hafellner Syn.: *Biatorella ochrophora*, *Lecidea ochrophora*, *Strangospora ochrophora* (Hafellner 2004d)

PILOPHORUS Th. Fr.

acicularis (Ach.) Th. Fr.

cereolus (Ach.) Th. Fr. in Hellbom

clavatus Th. Fr. Syn.: *P. hallii*

dovreensis (Nyl.) Timdal, Hertel & Rambold Syn.: *Lecidea pallida*

fibula (Tuck.) Th. Fr.

nigricaulis M. Satô

robustus Th. Fr.

vegae Krog

hallii (Tuck.) Vainio = *P. clavatus*

pallidus (Th. Fr.) Timdal = *P. dovrensis*

PLACIDIOPSIS Beltr.

cinerascens (Nyl.) Breuss

minor R. C. Harris

pseudocinerea Breuss

cervinula (Nyl.) Vainio = misidentification for North America

PLACIDIUM A. Massal. (Breuss 1996)

acarosporoides (Zahlbr.) Breuss (Breuss & Bratt 2000) Syns.: *Catapyrenium acarosporoides*, *Dermatocarpon acarosporoides*, *D. novomexicanum*, *Endopyrenium bajadanae*, *E. novomexicanum*, *Heteroplacidium acarosporoides*

andicola (Breuss) Breuss Syn.: *Catapyrenium andicolum*

arboreum (Schwein. ex E. Michener) Lendemer Syns.: *Catapyrenium tuckermanii*, *Dermatocarpon tuckermanii*, *Dermatocarpon arboretum*, *Endocarpon arboretum*, *E. tuckermanii*, *Endopyrenium tuckermanii* (Lendemer & Yahr 2004)

californicum Breuss (Breuss & Bratt 2000)

chilense (Räsänen) Breuss Syn.: *Catapyrenium chilense*

fangens (Breuss) Breuss (Breuss 2002d)

imbecillum (Breuss) Breuss (McCune & Rosentreter 2007)

lachneum (Ach.) B. de Lesd. Syn.: *Catapyrenium lachneum*

melchii A. Massal. Syns.: *Catapyrenium melchii*, *Dermatocarpon melchii*

norvegicum (Breuss) Breuss Syn.: *Catapyrenium norvegicum*

pilosellum (Breuss) Breuss (Nash et al. 1998)

podolepis (Breuss) M. Prieto (Prieto et al. 2012) Syns.: *Catapyrenium podolepis*, *Heteroplacidium podolepis*

rufescens (Ach.) A. Massal. Syns.: *Catapyrenium rufescens*, *Dermatocarpon rufescens*

squamulosum (Ach.) Breuss Syns.: *Catapyrenium squamulosum*, *Dermatocarpon hepaticum* auct. non (Ach.) Th. Fr.

lacinulatum (Ach.) Breuss = *Clavascidium lacinulatum*

lacinulatum var. *atrans* Breuss (Lendemer 2004c) = *Clavascidium lacinulatum* var. *atrans*

lacinulatum var. *erythrostratum* Breuss (Breuss 2000) = *Clavascidium lacinulatum* var. *erythrostratum*

tuckermanii (Ravenel ex Mont.) Breuss = *P. arboreum*

umbrinum (Breuss) Prieto & Breuss (Gueidan et al. 2009) = *Clavascidium umbrinum*

PLACOCARPUS Trevisan

[#]**americanus** K. Knudsen, Breuss, & Kocourk. (Knudsen et al. 2009)

schaereri (Fr.) Breuss = misidentification for North America (McCune et al. 2014b)

PLACODIUM F. H. Wigg.

aurantiacum (Lightf.) Hepp (Claassen 1912) = *Gyalolechia flavorubescens*
bolacina Tuck. = *Polycauliona bolacina*
cerinum (Hedw.) Nägeli ex Hepp (Claassen 1912) = *Caloplaca cerina*
cinnabarinum (Ach.) Nyl. = *Caloplaca cinnabarina*
cladodes Tuck. = *Pachypeltis cladodes*
coralloides Tuck. = *Polycauliona coralloides*
elegans (Link) DC = *Rusavskia elegans*
elegans var. *trachyphyllum* Tuck. = *Xanthomendoza trachyphylla*
ferrugineum (Hudson) Hepp = *Blastenia ferruginea*
ferrugineum f. *bolanderi* Tuck. = *Polycauliona luteominia* var. *bolanderi*
fulgens (Sw.) DC. = *Gyalolechia fulgens*
galactophylla Tuck. = *Squamulea galactophylla*
microphyllum Tuck. = *Caloplaca microphyllina*
peliophyllum Tuck. = *Caloplaca peliophylla*
pyraceum (Ach.) Fink (Claassen 1917) = *Athallia pyracea*
vitellinum (Hoffm.) Hepp (Claassen 1912) = *Candelariella vitellina*

PLACOMARONEA Räsänen

mendozae (Räsänen) M. Westberg (Westberg 2004a)

PLACOPSIS (Nyl.) Lindsay

cribellans (Nyl.) Räsänen
fusculoides D. J. Galloway (Galloway 2005)
gelida (L.) Lindsay Syn.: *Lecanora gelida*
lambii Hertel & V. Wirth (Moberg & Carlin 1996; Brodo et al. 2001)
roseonigra Brodo
effusa I. M. Lamb = misidentification for North America

PLACOPYRENIUM Breuss

bucekii (Nádv. & Servít) Breuss (Breuss 2009)
caeruleopulvinum (J.W. Thomson) Breuss (Breuss 2002e) Syn.: *Catapyrenium caeruleopulvinum*
canellum (Nyl.) Gueidan & Cl. Roux Syn.: *Verrucaria canella* (Navarro-Rosínes et al. 2007)
coloradoense Breuss Syn.: *Catapyrenium schaeferi* sensu Thomson (Breuss 2009)
conforme Breuss (Breuss 2009)
fuscillum (Turner) Gueidan & Cl. Roux Syn.: *Verrucaria fuscilla* (Navarro-Rosínes et al. 2007)
heppioides (Zahlbr.) Breuss Syn.: *Catapyrenium heppioides*, *Dermatocarpon heppioides* (Breuss 2002e)
lecideoides (A. Massal.) Gueidan & Cl. roux Syn.: *Dermatocarpon lecideoides*, *Verrucaria lecideoides* (Navarro-Rosínes et al. 2007)
#noxium Breuss (Breuss 1998)
stanfordii (Herre) K. Knudsen Syn.: *Catapyrenium zahlbruckneri*, *Dermatocarpon zahlbruckneri*, *Verrucaria stanfordii* (Knudsen & Lendemer 2006)
zahlbruckneri (Hasse) Breuss (Breuss 2002e) = *P. stanfordii*

PLACYNTHIELLA Elenkin

dasaea (Stirton) Tønsberg (Tønsberg 1997 [1998])
hyporhoda (Th. Fr.) Coppins & P. James Syn.: *Saccomorpha hyporhoda*
icmalea (Ach.) Coppins & P. James Syn.: *Saccomorpha icmalea*
knudsenii Lendemer (Lendemer 2004d)
oligotropha (J. R. Laundon) Coppins & P. James Syn.: *Saccomorpha oligotropha*, *Lecidea oligotropha*
uliginosa (Schrader) Coppins & P. James Syn.: *Saccomorpha uliginosa*, *Lecidea uliginosa*, *L. humosa*

PLACYNTHIUM (Ach.) Gray

asperellum (Ach.) Trevisan
flabellum (Tuck.) Zahlbr.
nigrum (Hudson) Gray Syn.: *Pannaria nigra*

pannariellum (Nyl.) H. Magn. (Spribillle et al. 2010)
petersii (Nyl.) Burnham Syn.: *Pannaria petersii*, *Pterygium petersii*
stenophyllum (Tuck.) Fink var **stenophyllum** Syn.: *Pannaria stenophylla*
stenophyllum var. **isidiatum** Henssen
subradiatum (Nyl.) Arnold
tantaleum (Hepp) Hue
 aspratile (Ach.) Henssen = *P. asperellum*
 dubium Herre = *Massalongia microphylliza*
 microphyllizum (Nyl. ex Hasse) Hasse = *Massalongia microphylliza*
 pannariellum (Nyl.) H. Magn. Reported from Greenland and Iceland but not the U. S. or Canada as yet
 rosulans (Th. Fr.) Zahlbr. Reported from Greenland but not the U. S. or Canada as yet
 subnigrum B. de Lesd = *Peccania subnigra*

PLAGIOCARPA R. C. Harris = LITHOTHELIUM

hyalospora (Nyl.) R. C. Harris = *Lithothelium hyalosporum*
 illota (Nyl.) R. C. Harris = *Lithothelium illotum*
 langloisii R. C. Harris = *Lithothelium illotum*
 macrospora R. C. Harris = *Lithothelium macrosporum*
 phaeospora R. C. Harris = *Lithothelium phaeosporum*
 septemseptata R. C. Harris = *Lithothelium septemseptatum*

PLATISMATIA W. L. Culb. & C. F. Culb.

glauca (L.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria glauca*
herrei (Imshaug) W. L. Culb. & C. F. Culb. Syn.: *Cetraria herrei*, *C. tuckermanii* Herre non Oakes
lacunosa (Ach.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria lacunosa*
norvegica (Lynge) W. L. Culb. & C. F. Culb. Syn.: *Cetraria norvegica*
stenophylla (Tuck.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria stenophylla*
tuckermanii (Oakes) W. L. Culb. & C. F. Culb. Syn.: *Cetraria atlantica*, *C. lacunosa* var. *atlantica*, *C. tuckermanii* Oakes non Herre
wheeleri Goward, Altermann & Björk (Lumbsch et al. 2011)

PLATYGRAMME Fée

caesiopruinosa (Fée) Fée Syn.: *Phaeographina caesiopruinosa*, *P. plurifera* (Staiger 2002)
coccinea F. Seavey & J. Seavey (Seavey & Seavey 2014a)
pachnodes (Fée) E. Tripp & Lendemer (Tripp & Lendemer 2010, Lücking et al. 2011b)
praestans (Müll. Arg.) Staiger (Tripp & Lendemer 2010, Lücking et al. 2011b)

PLATYGRAPHA Nyl.

californica (Tuck.) Nyl. = *Sigridea californica*
 hypothallina Zahlbr. = *Lecanographa hypothallina*
 ocellata Nyl. = *Mazosia ocellata*
 plurilocularis Zahlbr. = *Paraschismatomma ochroleucum* (Ertz & Tehler 2011)
 ravenelii Tuck. = *Opegrapha ravenelii*
 subattingens Nyl. = *Lecanactis epileuca*

PLATYGRAPHOPSIS Müll. Arg.

interrupta (Fée) Müll. Arg.

PLATYTHECIUM Staiger

colliculosum (Mont.) Hale Syn.: *Graphina colliculosa* (Tripp et al. 2010)
floridanum (Tuck.) Lendemer Syn.: *Graphis floridana*, *Graphina floridana* (Lendemer & Knudsen 2008)
grammitis (Fée) Staiger (Staiger 2002)

PLECTOCARPON Fée

***cladoniae** R. Sant. (Ertz et al. 2005)

- ***lambinonii** Diederich & Etayo (Ertz et al. 2005)
- ***lichenum** (Sommerf.) D. Hawksw.
- ***nashii** Hafellner (Hafellner et al. 2002)
- ***nephromeum** (Norman) Sant. (Goward et al. 1996)
- ***peltigerae** Zhurb., Ertz, Diederich & Miądl. (Ertz et al. 2003)
- ***scrobiculatae** Diederich & Etayo (Ertz et al. 2005)
- ***triebeliae** Diederich & Ertz (Ertz et al. 2005)

PLEOPSISIDIUM Körber

- chlorophanum** (Wahlenb.) Zopf Syns.: *Acarospora chlorophana*, *A. erythrophora*, *A. texana*, *A. weldensis*
- flavum** (Bellardi) Körber Syns.: *Acarospora flava*, *A. oxytona*
oxytonum (Ach.) Rabenh. = *P. flavum*
stenosporum (Stizenb. ex Hasse) K. Knudsen (Knudsen 2011c) = *P. flavum* (Knudsen & Kocourková 2013)

PLEUROTHELIOPSIS Zahlbr. = PYRENULA

- australiensis* (Müll. Arg.) Zahlbr. = *Anthracotheceium australiensis*
- nana* Zahlbr. = *Anthracotheceium australiensis*

PLEUROTREMA Müll. Arg. = LITHOTHELIUM

- anacardii* (Vainio) R. C. Harris nom. inval. = *Anisomeridium terminatum*
- inspersum* Müll. Arg. = *Anisomeridium americanum*, not present in North America? (Harris 1995)
- solivagum* Degel. = *Lithothelium hyalospora*

POELTINULA Hafellner

- cerebrina** (DC.) Hafellner

POLYBLASTIA A. Massal.

- albida** Arnold (Thomson 1997)
- amota** Arnold (McCune et al. 2014b)
- bryophila** Lönnr.
- cucurbitula** J. W. Thomson & B. M. Murray
- cupularis** A. Massal. Syn.: *Verrucaria intercedens*
- epigaea** A. Massal.
- exalbida** (Nyl.) Zahlbr. (Dillman et al. 2012)
- gothica** Th. Fr.
- hyperborea** Th. Fr.
- hyperborea** var. **macrospora** Lynge
- obsoleta** Arnold
- quartzina** Lynge (Spribille et al. 2010)
- sendtneri** Kremp.
- septentrionalis** Lynge
- theleodes** (Sommerf.) Th. Fr.
- cruenta* (Körber) P. James & Swinscow = *Sporodictyon cruentum*
- gelatinosa* (Ach.) Th. Fr. = *Agonimia gelatinosa*
- henscheliana* (Körber) Lönnr. (Fink 1935) = *Sporodictyon cruentum* (Vitikainen et al. 1997)
- integrascens* (Nyl.) Vainio = *P. hyperborea*
- intercedens* (Nyl.) Lönnr. = *P. cupularis*
- melaspora* (Taylor) Zahlbr. = *Henrica melaspora* (Savić & Tibell 2008)
- sommerfeltii* Lynge = *Sporodictyon terrestre*
- terrestris* Th. Fr. = *Sporodictyon terrestre*
- tristicula* (Nyl.) Arnold = *Agonimia tristicula*

POLYBLASTIOPSIS Zahlbr. = JULELLA

- dealbens* Fink = *Polymeridium proponens*

- +dispora (Müll. Arg.) Zahlbr. = Julella dispersa
- +fallaciosa (Stizenb. ex Arnold) Zahlbr. = Julella fallaciosa
- fallax (Nyl.) Fink = Arthopyrenia analepta
- floridana Fink = Porina nuculastrum
- inductula (Nyl.) Fink = Thelenella inductula
- intrusa (Nyl.) Zahlbr. = a Laurera sp., not in North America
- +lactea (A. Massal.) Zahlbr. = Julella lactea
- +quercicola Brodo = Julella fallaciosa
- +rappii Zahlbr. = Julella geminella
- +sublactea (Nyl.) Zahlbr. = Julella sublactaea

POLYCAULIONA Hue (Arup et al. 2013)

- ascendens** (S. Y. Kondr.) Frödén, Arup, & Søchting Syn.: Xanthoria ascendens
- bolacina** (Tuck.) Arup, Frödén & Søchting Syn.: Caloplaca bolacina, Placodium bolacinum
- brattiae** (W. A. Weber) Arup, Frödén & Søchting Syn.: Caloplaca brattiae
- candelaria** (L.) Frödén, Arup, & Søchting Syn.: Teloschistes candelarius, Xanthoria candelaria
- coralloides** (Tuck.) Hue Syn.: Caloplaca coralloides, Placodium coralloides
- flavogranulosa** (Arup) Arup, Frödén & Søchting Syn.: Caloplaca flavogranulosa
- ignea** (Arup) Arup, Frödén & Søchting Syn.: Caloplaca ignea
- impolita** (Arup) Arup, Frödén & Søchting Syn.: Caloplaca impolita
- inconspecta** (Arup) Arup, Frödén & Søchting Syn.: Caloplaca inconspecta
- ludificans** (Arup) Arup, Frödén & Søchting Syn.: Caloplaca ludificans
- luteominia** (Tuck.) Arup, Frödén & Søchting var. **luteominia** Syn.: Blastenia luteominia, Caloplaca laeta, C. luteominia, Placodium luteominium
- luteominia** var. **bolanderi** (Tuck.) Arup, Frödén & Søchting Syn.: Caloplaca bolanderi, Placodium ferrugineum f. bolanderi
- nashii** (Nav.-Ros., Gaya & Hladún) Arup, Frödén & Søchting Syn.: Caloplaca nashii
- phlogina** (Ach.) Arup, Frödén & Søchting Syn.: Caloplaca phlogina
- pollinarioides** (L. Lindblom & D.M. Wright) Frödén, Arup, & Søchting Syn.: Xanthoria pollinarioides
- polycarpa** (Hoffm.) Frödén, Arup, & Søchting Syn.: Teloschistes polycarpus T. ramulosus, Xanthoria polycarpa, X. ramulosa
- rosei** (Hasse) Arup, Frödén & Søchting Syn.: Caloplaca rosei
- stellata** (Wetmore & Kärnefelt) Arup, Frödén & Søchting Syn.: Caloplaca stellata
- tenax** (L. Lindblom) Frödén, Arup, & Søchting Syn.: Xanthoria tenax
- tenuiloba** (L. Lindblom) Frödén, Arup, & Søchting Syn.: Xanthoria tenuiloba
- verruculifera** (Vainio) Arup, Frödén & Søchting Syn.: Caloplaca gloriae sensu Aprot, C. verruculifera

POLYCHIDIUM (Ach.) Gray

- muscicola** (Sw.) Gray Syn.: Leptogium muscicola
- albociliatum (Desm.) Zahlbr. = Leptochidium albociliatum
- contortum Henssen = Leptogidium contortum (Muggia et al. 2011)
- dendriscum (Nyl.) Henssen = Leptogidium dendriscum (Muggia et al. 2011)
- intricatum (Nyl.) Henssen = Dendriscocaulon intricatum
- rivale (Tuck.) Fink = Scytinium rivale
- umhausense (Auersw.) Henssen = Dendriscocaulon umhausense

POLYCOCCUM Sauter ex Körber

- ***clauzadei** Nav.-Ros. & Cl. Roux (Hafellner et al. 2002)
- ***hymeniicola** (Berk. & Broome) Zhurb. (Spribille et al. 2010, Zhurbenko & Dillman 2010)
- ***kernerii** J. Steiner (Hafellner et al. 2002)
- ***laursenii** Zhurb. (Zhurbenko & Alstrup 2004)
- ***microsticticum** (Leighton ex Mudd) Arnold
- ***minutulum** Kocourková & F. Berger (Diederich 2003)
- ***opulentum** (Th. Fr. & Almq.) Arnold (Hafellner et al. 2002)
- ***peltigerae** (Fuckel) Vězda (Alstrup 2004)
- ***pulvinatum** (Eitner) R. Sant.

- ***sporastatae** (Anzi) Arnold
- ***squamarioides** (Mudd) Arnold
- ***trypethelioides** (Th. Fr.) R. Sant. (Diederich 2003)
- ***vermicularium** (Lindsay) D. Hawksw. (Esslinger & Egan 1995)
- ***bryonthae** (Arnold) Vězda (Zhurbenko 2009a) = *Didymocyrtis bryonthae* (Ertz et al. 2015a)
- ***epicrassum** (H. Olivier) R. Sant. = *Clypeococcum epicrassum*, but see note there
- ***galligenum** Vězda = *P. pulvinatum*
- ***gelidarium** (Mudd) D. Hawksw. = *Roselliniopsis gelidaria*

POLYDESMIA Boud.

- ***lichenis** Huhtinen & R. Sant. (Spribille et al. 2010)

POLYMERIDIUM (Müll. Arg.) R. C. Harris

- albidum** (Müll. Arg.) R. C. Harris
- albocinereum** (Kremp.) R. C. Harris
- catapastum** (Nyl.) R. C. Harris
- contendens** (Nyl.) R. C. Harris
- proponens** (Nyl.) R. C. Harris Syn.: *Campylothelium amylosporum*, *Polyblastiopsis dealbens*
- quinqueseptatum** (Nyl.) R. C. Harris Syn.: *Arthopyrenia quinqueseptata*, *Pyrenula quinqueseptata*
- subcinereum** (Nyl.) R. C. Harris Syn.: *Porina subcinerea*
- pleiomerellum** (Müll. Arg.) R. C. Harris = *P. albocinereum*

POLYPYRENULA D. Hawksw.

- sexlocularis** (Müll. Arg.) D. Hawksw. Syn.: *Polythelis sexlocularis*. The implied occurrence of this species in Florida is questionable. No material seen from North America

POLYSPORINA Vězda

- ***arenacea** (H. Magn.) K. Knudsen & Kocourk. Syn.: *Acarospora arenacea* (Knudsen & Kocourková 2008a)
- cyclocarpa** (Anzi) Vězda (Knudsen et al. 2011b)
- gyrocarpa** (H. Magn.) N. S. Golubk. Syn.: *Sarcogyne oligospora*, *S. gyrocarpa* (Knudsen & Kocourková 2009c)
- ***pusilla** (Anzi) M. Steiner ex Kantvilas (Knudsen & Kocourková 2008a)
- simplex** (Taylor) Vězda Syn.: *Biatorrella revertens*, *B. simplex*, *Lecanora privigna*, *Sarcogyne simplex*
- ***subfuscescens** (Nyl.) K. Knudsen & Kocourk. Syn.: *Acarospora subfuscescens*, *Sarcogyne bicolor* (Knudsen & Kocourková 2008a)
- urceolata** (Anzi) Brodo
- lapponica** (Ach. ex Schaerer) Degel. = *Sarcogyne lapponica* (see note there)
- ***lapponica** auct. N.A. = *Polysporina subfuscescens*
- oligospora** (H. Magn.) K. Knudsen (Knudsen & Lendemer 2005a) = *P. gyrocarpa*

POLYTHELIS Clem. = **POLYPYRENULA**

- sexlocularis** (Müll. Arg.) Clem. = *Polypyrenula sexlocularis* (q.v.)

PORINA Müll. Arg.

- amygdalina** Müll. Arg.
- heterospora** (Fink ex J. Hedrick) R. C. Harris
- linearis** (Leighton) Zahlbr. (Nash 2002) Syn.: *Pseudosagedia linearis*, *Trichothelium lineare*
- norrlinii** Vainio (Fryday 2010)
- nucula** Ach.
- nuculastrum** (Müll. Arg.) R. C. Harris Syn.: *Clathroporina nuculastrum*, *C. confinis*, *Polyblastiopsis floridana* (Harris 1995a)
- pacifica** Brodo (Brodo 2004)
- peregrina** Tretiach & McCarthy (Aptroot 2002e)
- radicicola** P. M. McCarthy & Tønsberg (McCarthy & Tønsberg 1998)
- salicina** Müll. Arg.

scabrida R. C. Harris (Harris 1995a)
aenea (Wallr.) Zahlbr. = Pseudosagedia aeneum
carpineae (Pers. ex Ach.) Zahlbr. = Pseudosagedia aeneum
cestrensis (Tuck. ex E. Michener) Müll. Arg. = Pseudosagedia cestrensis
chlorotica (Ach.) Müll. Arg. = Pseudosagedia chlorotica
cinerea "(Pers.) Zahlbr." = nom. illeg. = Strigula stigmatella
faginea (Schaerer) Arnold = Strigula stigmatella
guentheri (Flotow) Zahlbr. = Pseudosagedia guentheri
hibernica P. James & Swinscow = misidentification for North America (Harris 1995a)
lectissima (Fr.) Zahlbr. = Segrestia lectissima
leptalea (Durieu & Mont.) A. L. Sm. = Segestria leptalea
linearis (Leighton) Zahlbr. = Pseudosagedia linearis
mammillosa (Th. Fr.) Vainio = Segestria mammillosa
mastoidea (Ach.) Müll. Arg. = misidentification for North America (Harris 1995a)
nitidula Müll. Arg. = Pseudosagedia nitidulum
nucula var. heterospora Fink = Porina heterospora
olivacea (Pers.) A. L. Sm. = misidentification for North America
plumbaria (Stizenb.) Hasse = Arthopyrenia plumbaria
pulla (Ach.) Müll. Arg. = an Arthopyrenia sp., not in North America
rhapidosperma Müll. Arg. = Pseudosagedia rhapidosperma
subcinerea (Nyl.) Zahlbr. = Polymeridium subcinereum
thaxteri R. Sant. = Pseudosagedia thaxteri
viridiseda (Nyl.) Zahlbr. = Strigula viridiseda

POROCYPHUS Körber

coccodes (Flotow) Körber Syn.: *P. furfurellus*
kenmorensis (Holl ex Nyl.) Henssen
dispersus E. Dahl = *Thelignya lignyota*
furfurellus (Nyl.) Forssell = *P. coccodes*

PORPIDIA Körber

albocaerulescens (Wulfen) Hertel & Knoph Syn.: *Huilia albocaerulescens*, *Lecidea albocaerulescens*, *L. hebescens*
albocaerulescens (Wulfen) Hertel & Knoph var. **polycarpiza** (Vainio) Rambold & Hertel (Rambold 1989)
calcarea Gowan
carlottiana Gowan
cinereoatra (Ach.) Hertel & Knoph Syn.: *Huilia cinereoatra*, *Lecidea cinereoatra*
contraponenda (Arnold) Knoph & Hertel
crustulata (Ach.) Hertel & Knoph Syn.: *Huilia crustulata*, *Lecidea crustulata*
degelii (H. Magn.) Lendemer Syn.: *Lecidea degelii* (Lendemer & Harris 2014c)
flavicunda (Ach.) Gowan Syn.: *Huilia flavocaerulescens*, *Lecidea flavocaerulescens* (Fryday 2005)
flavocruenta Fryday & Buschbom (Fryday 2005)
grisea Gowan
lowiana Gowan
macrocarpa (DC.) Hertel & A. J. Schwab Syn.: *Huilia macrocarpa*, *H. nigrocruenta*, *Lecidea steriza*, *L. macrocarpa*, *L. platycarpa*, *L. phylliscina*, *L. contigua*, *L. soledifera*
melinodes (Körber) Gowan & Ahti Syn.: *Aspicilia melinodes*, *Huilia melinodes*, *Lecidea melinodes*
ochrolemma (Vainio) Brodo & R. Sant. Syn.: *Hymenelia ochrolemma*
platycarpoides (Bagl.) Hertel Syn.: *Huilia platycarpoides*
rugosa (Taylor) Coppins & Fryday Syn.: *Huilia glaucophaea*, *Lecidea glaucophaea* (Fryday 2005)
soredizodes (Lamy ex Nyl.) J. R. Laundon Syn.: *Lecidea soredizodes*, *Huilia soredizodes* (Fryday et al. 2007)
speirea (Ach.) Kremp. Syn.: *Lecidea speirea*
subsimplex (H. Magn.) Fryday (Coppins & Fryday 2006b)
superba (Körber) Hertel & Knoph Syn.: *Huilia superba*

thomsonii Gowan

tuberculosa (Sm.) Hertel & Knoph Syns.: *Huilia tuberculosa*, *Lecidea solediza*, *L. tumida*

zeoroides (Anzi) Knoph & Hertel Syn.: *Lecidea macrocarpa* var. *trullisata*

diversa (Lowe) Gowan = *P. contraponenda* (Fryday 2005)

flavocaerulescens (Hornem.) Hertel & A. J. Schwab = *P. flavicunda* (Fryday 2005)

glaucophaea (Körber) Hertel & Knoph = *P. rugosa* (Fryday 2005)

herteliana Gowan = *P. cinereoatra* (Fryday 2005)

nigrocruenta (Anzi) Diederich & Sérus. = *P. macrocarpa*

pseudomelinodes A. J. Schwab = *Porpidia ochrolemma*

tahawasiana Gowan = *P. subsimplex*

PRONECTRIA Clem.

***anisospora** (Lowen) Lowen Syn.: *Nectriella anisospora*

***dillmaniae** Zhurb. (Zhurbenko et al. 2005)

***erythrinella** (Nyl.) Lowen Syn.: *Nectriella erythrinella*

***fissuriprodiens** Etayo (Spribille et al. 2010)

***oligospora** Lowen & Rogerson

***robergei** (Mont. & Desm.) Lowen (Alstrup & Cole 1998)

***tibellii** Zhurb. (« *tibellae* ») (Zhurbenko & Alstrup 2004)

***walkerorum** Zhurb. (Zhurbenko et al. 2005)

PROTOBLASTENIA (Zahlbr.) J. Steiner

calva (Dickson) Zahlbr.

cyclospora (Hepp ex Körber) Poelt (Dillman et al. 2012)

incrustans (DC.) J. Steiner

rupestris (Scop.) J. Steiner

terricola (Anzi) Lynge

cinnabarina (Sommerf.) Räsänen = *Ramboldia cinnabarina*

monticola (Ach.) J. Steiner = *Clauzadea monticola*

quernea (Dickson) Clauzade = *Pyrrhospora quernea*

rupestris var. *calva* (Dickson) J. Steiner = *P. calva*

russula (Ach.) Räsänen = *Ramboldia russula*

PROTOMICAREA Hafellner (Hafellner & Türk 2001)

limosa (Ach.) Hafellner Syn.: *Lecidea limosa*

PROTOPANNARIA (Gyelnik) P. M. Jørg. & S. Ekman

pezizoides (Weber) P. M. Jørg. & S. Ekman (Jørgensen 2000c) Syn: *Pannaria pezizoides*

PROTOPARMELIA M. Choisy

atriseda (Fr.) R. Sant. & V. Wirth Syn.: *Lecanora atriseda*

badia (Hoffm.) Hafellner Syn.: *Lecanora badia*, *L. grandis*

capitata Lendemer (Lendemer & Lumbsch 2008)

cupreobadia (Nyl.) Poelt

hypotremella Herk, Spier & V. Wirth (Brodo & Aptroot 2005)

isidiata Diederich, Aptroot & Sérus. (Lendemer & Lumbsch 2008)

nephaea (Sommerf.) R. Sant. ex Poelt & Obermayer Syn.: *Lecanora nephaea*

ochrococca (Nyl.) P. M. Jørg., Rambold & Hertel Syns.: *Lecidea ochrococca*, *Lecanora ochrococca*, *L. phaeobola*

[#]*ryaniana* van den Boom, Sipman & Elix (van den Boom et al. 2007) = *Miriquidica verrucariicola* (Knudsen et al. 2015)

PROTOPARMELIOPSIS M. Choisy

bipruinosa (Fink) S. Y. Kondr. (Kondratyuk et al. 2012) Syn.: *Lecanora bipruinosa*

crustacea (Savicz) S. Y. Kondr. (Kondratyuk et al. 2012) Syn.: *Lecanora crustacea*

dispersoareolata (Körber) S. Y. Kondr. (Kondratyuk et al. 2012) Syn.: *Lecanora dispersoareolata*

garovaglii (Körber) Arup, Zhao Xin & Lumbsch (Zhao et al. 2016) Syns.: *Lecanora cascadenis*, *L. garovaglii*, *L. nevadensis*
geiserae (B. D. Ryan) S. Y. Kondr. (Kondratyuk et al. 2012) Syn.: *Lecanora geiserae*
gyrophorica (Lendemer) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora gyrophorica*
kofae (B. D. Ryan & T. H. Nash) (Kondratyuk et al. 2012) Syn.: *Lecanora kofae*
laatokkaensis (Räsänen) Moberg & R. Sant. Syn.: *Lecanora laatokkaensis*
mazatzalensis (B. D. Ryan & T. H. Nash) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora mazatzalensis*
muralis (Schreber) M. Choisy (Zhao et al. 2016) Syns.: *Lecanora diffracta*, *L. muralis*, *L. saxicola*, *L. versicolor*
peltata (Ramond) Arup, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Rhizoplaca peltata*, *Lecanora peltata*
pinguis (Tuck.) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora pinguis*

PROTOTHELENELLA Räsänen

corrosa (Körber) H. Mayrhofer & Poelt Syn.: *Microglæna corrosa*
***crocea** (Bagl. & Carestia) Haffelner & H. Mayrhofer (Spribille et al. 2010)
leucothelia (Nyl.) H. Mayrhofer & Poelt (Goward et al. 1996)
pluriseptata Fryday (Fryday 2004a) Syn.: *Gongylia muscorum*
***santessonii** H. Mayrhofer
sphinctrinoidella (Nyl.) H. Mayrhofer & Poelt (Mayrhofer 1987)
sphinctrinoides (Nyl.) H. Mayrhofer & Poelt Syn.: *Microglæna sphinctrinoides*, *Verrucaria pernigrata*

PROTOUNGUICULARIA Raitv. & R. Galán

***nephromatis** (Zhurb. & Zavarzin) Huhtinen, D. Hawksw. & Ihlen (Huhtinen et al. 2008) Syn.: *Unguiculariopsis nephromatis*
***transiens** (Höhn.) Huhtinen (Huhtinen et al. 2008)

PSEUDEPHEBE M. Choisy

minuscula (Nyl. ex Arnold) Brodo & D. Hawksw. Syn.: *Alectoria minuscula*
pubescens (L.) M. Choisy Syns.: *Alectoria pubescens*, *Ephebe pubescens*, *Parmelia lanata*

PSEUDEVERNIA Zopf

cladonia (Tuck.) Hale & W. L. Culb. Syn.: *Parmelia cladonia*
consocians (Vainio) Hale & W. L. Culb.
intensa (Nyl.) Hale & W. L. Culb.
furfuracea (L.) Zopf = misidentification for North America; records are either *P. consocians* or *P. intensa*

PSEUDOCYPHELLARIA Vainio

crocata (L.) Vainio Syn.: *Sticta crocata*
hawaiiensis H. Magn. (Moncada et al. 2014)
mallota (Tuck.) H. Magn. (Tønsberg 1999b)
rainierensis Imshaug
anomala Brodo & Ahti = *Lobaria anomala* (McCune et al. 2014b)
anthraspis (Ach.) H. Magn. = *Lobaria anthraspis* (McCune et al. 2014b)
aurata (Ach.) Vainio = *Crocodia aurata* (Galloway & Elix 2013)
mougeotiana (Delise) Vainio = *P. crocata*
perpetua McCune & Miądl. (Miądlowska et al. 2002) = *P. hawaiiensis* (Moncada et al. 2014)

PSEUDOPARMELIA Lynge (Elix & Nash 1997)

cubensis (Nyl.) Elix & T. H. Nash (Elix & Nash 1997) Syn.: *Parmelia leucochlora* Tuck. non (Mont.) Mont.
floridense Elix & T. H. Nash (Elix & Nash 1997)
uleana (Müll. Arg.) Elix & T. H. Nash (Elix & Nash 1997) Syn.: *Parmelia uleana*, *Parmelia endoxantha*, *Parmelia congruens* auct., *Parmelia sphaerospora* auct.

alabamensis (Hale & McCull.) Hale = Canoparmelia alabamensis
amazonica (Nyl.) Hale = Canoparmelia amazonica
baltimorensis (Gyelnik & Fóris) Hale = Flavoparmelia baltimorensis
caperata (L.) Hale = Flavoparmelia caperata
caroliniana (Nyl.) Hale = Canoparmelia caroliniana
crozalsiana (B. de Lesd.) Hale = Canoparmelia crozalsiana
cryptochlorophaea (Hale) Hale = Canoparmelia cryptochlorophaea
martinicana (Nyl.) Hale = Canoparmelia martinicana
rutidota (Hooker f. & Taylor) Hale = Flavoparmelia rutidota
salacinifera (Hale) Hale = Canoparmelia salacinifera
sphaerospora (Nyl.) Hale (North American records) = Pseudoparmelia uleana
texana (Tuck.) Hale = Canoparmelia texana

PSEUDOPYRENIDIUM Nav.-Ros., Zhurb. & Cl. Roux

***tartaricola** (Lindsay) Nav.-Ros., Zhurb. & Cl. Roux (Zhurbenko 2013)

PSEUDOPYRENULA Müll. Arg.

diluta (Fée) Müll. Arg. var. **degenerans** Vainio (Harris 1998)

subgregaria Müll. Arg. (Lücking et al. 2011b)

subnudata Müll. Arg. (Lücking et al. 2011b)

pupula (Ach.) Müll. Arg. = Trypethelium floridanum for North American records

PSEUDOSAGEDIA (Müll. Arg.) M. Choisy (Harris 2005)

aenea (Wallr.) Hafellner & Kalb Syn.: Trichothelium aeneum, Porina aenea, P. carpinea

cestrensis (Tuck. ex E. Michener) R. C. Harris Syns.: Porina cestrensis, Trichothelium cestrense, Verrucaria cestrensis

chlorotica (Ach.) Hafellner & Kalb Syn.: Porina chlorotica, Trichothelium chloroticum

crocynoides (R. C. Harris) R. C. Harris Syn.: Trichothelium crocynoides

guentheri (Flotow) Hafellner & Kalb Syn.: Porina guentheri, Trichothelium guentheri

isidiata (R. C. Harris) R. C. Harris Syn.: Trichothelium isidiatum

nitidula (Müll. Arg.) Hafellner & Kalb Syn.: Porina nitidula, Trichothelium nitidulum

rhaphidosperma (Müll. Arg.) R. C. Harris Syns.: Porina rhaphidosperma, Trichothelium rhaphidospermum

thaxteri (R. Sant.) Hafellner & Kalb Syn.: Porina thaxteri, Trichothelium thaxteri

linearis (Leighton) Hafellner & Kalb = Porina linearis

PSEUDOSCHISMATOMMA Ertz & Tehler (Ertz et al. 2015b)

rufescens (Pers.) Ertz & Tehler Syn.: Opegrapha rufescens

PSIIOLECHIA A. Massal.

clavulifera (Nyl.) Coppins Syn.: Lecidea adirondackii

lucida (Ach.) M. Choisy Syn.: Lecidea lucida

PSORA Hoffm.

brunneocarpa Timdal (Timdal 2002a)

californica Timdal

cerebriformis W. A. Weber

crenata (Taylor) Reinke Syns.: Lecidea crenata, L. coroniformis

decipiens (Hedwig) Hoffm. Syns.: Biatora decipiens, Lecidea decipiens

elenkinii Rass. (Zhurbenko 2009a)

globifera (Ach.) A. Massal. Syn.: Lecidea globifera

himalayana (Church. Bab.) Timdal

hyporubescens Timdal (Timdal 2002a)

icterica (Mont.) Müll. Arg. Syn.: Lecidea icterica

luridella (Tuck.) Fink Syn.: Lecidea luridella

montana Timdal

nipponica (Zahlbr.) Gotth. Schneider Syns.: *Lecidea novomexicana*
pacifica Timdal
peninsularis Timdal (Timdal 2002a)
pruinosa Timdal (Timdal 2002a)
pseudorussellii Timdal
rubiformis (Ach.) Hooker Syn.: *Lecidea rubiformis*
russellii (Tuck.) A. Schneider Syns.: *Lecidea russellii*, *Biatora russellii*
tenuifolia Timdal
tuckermanii R. A. Anderson ex Timdal
vallesiaca (Schaerer) Timdal
anthracophila (Nyl.) Arnold = *Carbonicola anthracophila*
demissa (Rutstr.) Hepp = *Lecidoma demissum*
friesii (Ach.) Hellbom = *Xylopsora friesii*
lurida (Ach.) DC. = *Romjularia lurida*
novomexicana B. de Lesd. = *P. nipponica*
ostreata Hoffm. = *Hypocenomyce scalaris*
petri (Tuck.) Fink = *Romjularia lurida*
pulcherrima (Vainio) Elenkin = *Anamylopsora pulcherrima*
rufonigra (Tuck.) A. Schneider = *Psorula rufonigra*
scalaris (Ach. ex Lilj.) Hooker = *Hypocenomyce scalaris*
scholanderi (Lynge) R. A. Anderson = *Toninia tristis*
scotopholis (Tuck.) Fink (Fink 1935) = *Miriquidica scotopholis*
testacea (Hoffm.) Ach. Syns.: *Lecidea testacea*, *Chrysopsora testacea*, but not present in North American flora.
texana W. A. Weber = *Xanthopsorella texana*

PSORINIA Gotth. Schneider

conglomerata (Ach.) Gotth. Schneider Syn.: *Toninia conglomerata*

PSOROGLAENA Müll. Arg.

costaricensis Henssen (Lücking et al. 2011b)
cubensis Müll. Arg. var. **cubensis**
cubensis var. **teretiloba** O. Eriksson
dictyospora (Orange) H. Harada (Harada 2003) Syn.: *Macentina dictyospora*
stigonemoides (Orange) Henssen (Björk et al. 2009)

PSOROMA Michaux

cinnamomeum Malme (Jørgensen 2000c)
hirsutulum Nyl. (Jørgensen 2005)
hypnorum (Vahl) Gray Syn.: *Pannaria hypnorum*
tenue Henssen var. **boreale** Henssen

PSOROTICHIA A. Massal.

hassei Fink ex J. Hedrick
minuta H. Magn.
montinii (A. Massal.) Forssell (Schultz 2007c)
murorum A. Massal. (Schultz 2007c)
nigra H. Magn.
schaereri (A. Massal.) Arnold Syn.: *Pyrenopsis schaeferi*
taurica (Nyl.) Vainio (Schultz 2007c)
numidella (Nyl.) Forssell var. *flageyana* J. Steiner Erroneously listed here; reported only from Mexico (Schulz 2007c)
segregata (Nyl. ex Hasse) Hasse = *Lempholemma chalazanum*
squamulosa Zahlbr. = *Gloeoheppia squamulosa*

PSORULA Gotth. Schneider

rufonigra (Tuck.) Gotth. Schneider Syns.: *Biatora rufonigra*, *Lecidea rufonigra*, *L. brouardii*, *Psora rufonigra*
scotopholis (Tuck.) Gotth. Schneider = *Miriquidica scotopholis*

PTERYGIOPSIS Vainio

atra Vainio
canariensis Henssen (Schultz 2006)
cava M. Schultz (Schultz 2006)
neglecta (Erichsen) M. Schultz & Thüs ined. Syn.: *Forsellia neglecta* (Lewis 2014)

PTERYGIUM Nyl.

petersii Nyl. (Fink 1935) = *Placynthium petersii*

PTYCHOGRAPHA Nyl. (McCune 1997b)

xylographoides Nyl. (McCune 1997b)

PUNCTELIA Krog

appalachensis (W. L. Culb.) Krog Syn.: *Parmelia appalachensis*
bolliana (Müll. Arg.) Krog Syns.: *Parmelia bolliana*, *P. frondifera*
borreri (Sm.) Krog Syns.: *Parmelia borreri*, *P. pseudoborreri*
caseana Lendemer & Hodgkinson (Lendemer & Hodgkinson 2010)
eganii Hodgkinson & Lendemer (Hodgkinson & Lendemer 2011)
graminicola (B. de Lesd.) Egan Syn.: *Parmelia graminicola*, *P. semansiana* (Egan 2003)
hypoleucites (Nyl.) Krog Syn.: *Parmelia hypoleucites*
jeckeri (Roum.) Kalb (Lendemer & Hodgkinson 2010)
missouriensis G. Wilh. & Ladd (Adler 1997, van Herk & Aptroot 2000, Aptroot 2003)
nashii Marcelli & Canêz (Marcelli et al. 2011)
perreticulata (Räsänen) G. Wilh. & Ladd Syn.: *Parmelia perreticulata*
punctilla (Hale) Krog
reddenda (Stirton) Krog Syn.: *Parmelia reddenda*
rudecta (Ach.) Krog Syn.: *Parmelia rudecta*
stictica (Duby) Krog Syn.: *Parmelia stictica*
subpraesignis (Nyl.) Krog Syn.: *Parmelia subpraesignis*
darrowi (J. W. Thomson) Krog = *Flavopunctelia darrowi*
flaventior (Stirton) Krog = *Flavopunctelia flaventior*
praesignis (Nyl.) Krog = *Flavopunctelia praesignis*
semansiana (W. L. Culb. & C. F. Culb.) Krog = *P. graminicola*
soredica (Nyl.) Krog = *Flavopunctelia soredica*
subrudecta (Nyl.) Krog = misidentification for North America (Lendemer & Hodgkinson 2010)
ulophylla (Ach.) van Herk & Aptroot (Tucker et al. 2006) = *P. jeckeri* (Lendemer & Hodgkinson 2010)

PUTTEA S. Stenroos & Huhtinen

caesia (Fr.) M. Svensson & T. Sprib. (Dillman et al. 2012) Syn.: *Lecidea symmictella*
exsequens (Nyl.) Printzen & Davydov (Buck & Lendemer 2012)
margaritella (Hulting) S. Stenroos & Huhtinen (Spribille et al. 2010)

PYCNORA Hafellner (Hafellner & Türk 2001)

praestabilis (Nyl.) Hafellner Syn.: *Hypocenomyce praestabilis*
sorophora (Vainio) Hafellner Syn.: *Hypocenomyce sorophora*
xanthococca (Sommerf.) Hafellner Syns.: *Hypocenomyce xanthococca*, *Lecidea xanthococca*
leucococca (R. Sant.) R. Sant. (Santesson et al. 2004) = *Toensbergia leucococca*

PYCNOTHELIA Dufour

papillaria Dufour Syns.: *Cladonia heteromorpha*, *C. papillaria*
cladinoides Nyl. = *Cladonia caroliniana* (Ahti & Brodo 1981)

PYRENASTRUM Eschw. = **PYRENULA**

astroideum (Fée) Eschw. = *Pyrenula astroideum*
cubanum Müll. Arg. = *Pyrenula cubana*
fuscum Mont. = *Pyrenula septicollaris*
pyrenastraeum (Nyl.) Zahlbr. = *Pyrenula septicollaris*

PYRENIDIUM Nyl.

***actinellum** Nyl.
***aggregatum** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010g)
***hyalosporum** Alstrup, D. Hawksw. & R. Sant.
***octosporum** Looman = *Thelenella muscorum* var. *octospora*

PYRENOCARPON Trevisan

thelostomum (Ach. ex J. Harriman) Coppins & Aptroot (Dillman et al. 2012)

PYRENOCOLLEMA Reinke

atlanticum (Vainio) R. C. Harris (Harris 1995a)
caesium (Nyl.) R. C. Harris
prospersellum (Nyl.) R. C. Harris Syn.: *Arthopyrenia prospersella*
tichothecioides (Arnold) R. C. Harris Syn.: *Arthopyrenia tichothecioides*
elegans R. Sant. = *Collemopsidium elegans*
halodytes (Nyl.) R. C. Harris = *Collemopsidium halodytes*
strontianense (Swinscow) R. C. Harris = *Collemopsidium angermannicum*
sublitorale (Leighton) R. C. Harris ex Fletcher = *Collemopsidium sublitorale*

PYRENODESMIA A. Massal. (Arup et al. 2013)

variabilis (Pers.) A. Massal. Syn.: *Caloplaca variabilis*
albovariegata B. de Lesd. = *Caloplaca albovariegata*
elaeodes E. D. Rudolph = *Caloplaca pellodella*
montana B. de Lesd. = a *Caloplaca* sp.

PYRENOPSISIDIUM (Nyl.) Forssell = **CRYPTOTHELE**

granuliforme (Nyl.) Forssell = *Cryptothele granuliformis*
homoeopsis (Nyl.) Forssell = *Pyrenopsis furfurea*
iivarensis (Vainio) Forssell (Thomson 1997) = *Pyrenopsis furfurea* (Henssen & Jørgensen 1990; Santesson 1993)

PYRENOPSIS (Nyl.) Nyl.

compacta Willey
furfurea (Nyl.) Th. Fr. Syns.: *Pyrenopsidium homoeopsis*, *P. iivarensis*
fuscoatra Fink
grumulifera Nyl.
haemalella (Nyl.) Blomb. & Forssell
haematina P. M. Jörg. & Henssen (Spribille et al. 2010)
lecideella Fink ex J. Hedrick
phaeococca Tuck.
polycocca (Nyl.) Tuck.
portoricensis Zahlbr. (fide Perlmutter, see appendix)
reducta Th. Fr. (Hutten et al. 2013)
sanguinea Anzi
subareolata Nyl. (Schultz 2009)
subfuliginea Nyl.
tasmanica Nyl.
triptococca Nyl. (Schultz 2007d)
viridirufa Tuck.

granatina (Sommerf.) Nyl. = *Euopsis granatina*
 granuliformis (Nyl.) Th. Fr. = *Cryptothele granuliforme*
 homoeopsis Nyl. = *P. furfurea*
 melambola (Tuck.) Tuck. = *Metamelanea melambola*
 "multispora E. Dahl" Report probably refers to *P. myriospora* E. Dahl = *P. grumulifera*
 myriospora E. Dahl = *P. grumulifera*
 phylliscina (Tuck.) Tuck. = *Cryptothele permiscens*
 pulvinata (Schaerer) Th. Fr. = *Euopsis pulvinata*
 schaereri A. Massal. = *Psorotichia schaereri*

PYRENOTHAMNIA Tuck. = **ENDOCARPON**

brandegei (Tuck.) Zahlbr. = *Endocarpon pulvinatum*
 spraguei Tuck. = *Endocarpon pulvinatum*

PYRENOTHRIX Riddle

nigra Riddle Syn.: *Lichenothrix riddlei*

PYRENOTRICHUM Mont.

splitgerberi Mont. = *campylidia* of lichens

PYRENULA A. Massal.

acutalis R. C. Harris
acutispora Kalb & Hafellner (Aptroot 1996)
adacta Fée (Aptroot 2012)
anomala (Ach.) Vainio Syn.: *Melanotheca anomala*, *M. achariana*
aspistea (Ach.) Ach.
astroidea (Fée) R. C. Harris Syn.: *Parmentaria astroidea*
atrolaminata R. C. Harris (Aptroot 1996)
bahiana Malme (Aptroot 2012)
balia (Kremp.) R. C. Harris (Aptroot 2012)
breutelii (Müll. Arg.) Aptroot (Aptroot 2012) Syn.: *Anthracotheceum maculare*
brunnea Fée (Lücking et al. 2011b)
caryae R. C. Harris (Aptroot 1996)
cerina Eschw.
chlorospila (Nyl.) Arnold (Aptroot 2012)
circumfiniens Vainio (Aptroot 2012) Syn.: *Parathelium subferrugineum*
cocoes Müll. Arg.
confinis (Nyl.) R. C. Harris (Lücking et al. 2011b)
confoederata R. C. Harris
cruenta (Mont.) Vainio Syn.: *Melanotheca cruenta*, *M. subincruenta*, *Trypethelium cruentum*
cruentata (Müll. Arg.) R. C. Harris Syn.: *Bottaria cruentata*
cubana (Müll. Arg.) R. C. Harris Syn.: *Pyrenastrum cubanum*
cuyabensis (Malme) R. C. Harris Syn.: *Parathelium cuyabense*
dermatodes (Borrer) Schaerer (Lücking et al. 2011b)
dissimulans (Müll. Arg.) R. C. Harris (Seavey & Seavey 2014a)
duplicans (Nyl.) Aptroot (Lücking et al. 2011b)
erumpens R. C. Harris Syn.: *Parathelium emergens*
fetivica (Kremp.) Müll. Arg. (Aptroot 2012)
globifera (Eschw.) Aptroot (Lücking et al. 2011b)
laetior Müll. Arg. (Harris 1995a)
laevigata (Pers.) Arnold
leucostoma Ach. Syn.: *Anthracotheceum leucostomum*, *Parmentaria rappii*
macounii R. C. Harris
mamillana (Ach.) Trevisan (fide R. Harris)
micheneri R. C. Harris
microcarpa Müll. Arg.

microtheca R. C. Harris Syn.: Parathelium microcarpum
minor Fée (Seavey & Seavey 2014a)
nitidula (Bres.) R. C. Harris (Harris 1995a)
novemseptata Vainio (Aptroot 2012) Syn.: Anthracothecium varians
occidentalis (R. C. Harris) R. C. Harris
ochraceoflava (Nyl.) R. C. Harris Syn.: Anthracothecium ochraceoflavum
ochraceoflavens (Nyl.) R. C. Harris Syn.: Anthracothecium ochraceoflavens
oleosa R. C. Harris
parvinuclea (Meyen & Flotow) Aptroot (Seavey & Seavey 2014a)
papillifera (Nyl.) Aptroot (Aptroot 2012)
pleiomeria (Nyl.) Zahlbr. (Seavey & Seavey 2014a)
pseudobufonia (Rehm) R. C. Harris
punctella (Nyl.) Trevisan
pyrenuloides (Mont.) R. C. Harris Syn.: Anthracothecium pyrenuloides
quassiicola Fée
ravenelii (Tuck.) R. C. Harris Syn.: Parmentaria ravenelii
reebiae Aptroot & Gueidan (Gueidan et al. 2016)
rubrostoma R. C. Harris
schiffneri (Zahlbr.) Aptroot (Aptroot 2012) Syn. Anthracothecium falsarium
septicollaris (Eschw.) R. C. Harris Syn.: Pyrenastrum fuscum, P. pyrenastraeum
sexlocularis (Nyl.) Müll. Arg. (Lücking et al. 2011b)
subelliptica (Tuck.) R. C. Harris
subgregantula Müll. Arg. (Aptroot 2012)
tenuisepta R. C. Harris
thelomorpha Tuck. Syn.: Anthracothecium thelomorphum
wetmorei R. C. Harris
wheeleri R. C. Harris
 aggregata (Fée) Fée (Mohr 1901) = misidentification for North America
 aquila R. C. Harris = P. aspistea (Aptroot 2012)
 caraibica Aptroot & Etayo (Etayo & Aptroot 2003) = Pyrenula adacta (Aptroot 2012)
 cerasi (Schrader) Hepp = Arthopyrenula cerasi
 cinchonae (Ach.) Tuck. (Mohr 1901) = Arthopyrenia cinchonae
 cinerea Zahlbr. = P. microcarpa
 cinerella (Nyl.) Branth & Rostr. (Claassen 1912) = Microthelia micula
 citriformis R. C. Harris = P. fetivica (Aptroot 2012)
 clandestina Ach. (Fink 1935) Typographic error for Pyrenula clandestina Ach. = Ocellularia clandestine (Ach.) Müll. Arg., an apparent misidentification for N. America
 concatervans (Nyl.) R. C. Harris = P. sexlocularis (Aptroot 2012)
 corticata (Müll. Arg.) R. C. Harris = P. confinis (Aptroot 2012)
 falsaria (Zahlbr.) R. C. Harris = P. schiffneri (Aptroot 2012)
 farrea auct. = Eopyrenula leucoplaca, but a misidentification for North America
 fulvella R. C. Harris = P. subgregantula
 glabrata (Ach.) A. Massal. = P. laevigata
 herrei Fink = Arthopyrenia plumbaria
 imperfecta (Ellis & Everh.) R. C. Harris = P. subelliptica
 leucoplaca (Wallr.) Körber = Eopyrenula leucoplaca, but a misidentification for North America
 leucoplaca var. pluriloculata Fink = Eopyrenula intermedia
 lucifera R. C. Harris = Pyrenula dermatodes (Aptroot 2012)
 macularis (Zahlbr.) R. C. Harris = P. breutelii (Aptroot 2012)
 maculata (R. C. Harris) R. C. Harris = P. chlorospila (Aptroot 2012)
 mamillana (Ach.) Trevisan = misidentification for North America
 marginata Hooker = P. mamillana
 martinicana (Vainio) R. C. Harris = P. adacta
 megalospora Fink = Acrocordia megalospora
 mucosa (Vainio) R. C. Harris (Harris 1995a) = P. papillifera (Aptroot 2012)
 neglecta R. C. Harris = P. pseudobufonia

nitida (Weigel) Ach. = misidentification for North America
 nitidella (Flörke ex Schaerer) Müll. Arg. var. maculata R. C. Harris = *P. chlorospila* (Aptroot 2012)
 pachycheila Tuck. (Tuckerman 1872) = *Anthracotheceium pachycheilum*
 personata (Malme) R. C. Harris = *P. subgregantula* (Aptroot 2012)
 pinguis (Sprengel) Fée = misidentification for North America
 plittii R. C. Harris = *P. nitidula* (Aptroot 2012)
 pulicina Nyl. (Fink 1935) Not located in any available source (Esslinger & Tucker 2009)
 quinqueseptata (Nyl.) Tuck. (Tuckerman 1872) = *Polymeridium quinqueseptatum*
 santensis (Nyl.) Müll. Arg. = *P. balia* (Aptroot 2012)
 subaggregata Müll. Arg. Not in North America
 subferruginea (Malme) R. C. Harris = *P. circumfiniens* (Aptroot 2012)
 subprostans (Nyl.) Tuck. (Tuckerman 1872) = *Anisomeridium subprostans*
 texana Tuck. ex R. C. Harris = *P. microcarpa*
 tropica (Ach.) Trevisan = *Trypethelium tropicum*
 xyloides (Eschw.) Müll. Arg. = *P. mamillana*

PYRENULELLA Fink = PHAEOSPORA

*endococcoidea (Nyl.) Fink = *Phaeospora rimosicola*

PYRGILLUS Nyl.

javanicus (Mont. & Bosch) Nyl.
 americanus Nyl. = *P. javanicus*

PYRRHOSPORA Körber

quernea (Dickson) Körber Syns.: *Problastenia quernea*, *Lecidea quernea*
 cinnabarina (Sommerf.) M. Choisy = *Ramboldia cinnabarina*
 elabens (Fr.) Hafellner = *Ramboldia elabens*
 gowardiana T. Sprib. & Hauck (Spribille & Hauck 2003) = *Ramboldia gowardiana*
 russula (Ach.) Hafellner = *Ramboldia russula*
 subcinnabarina (Tønsberg) Hafellner = *Ramboldia subcinnabarina*
 varians (Ach.) R. C. Harris = *Lecidea varians*

PYXINE Fr.

albovirens (G. Meyer) Aptroot
berteriana (Fée) Imshaug
caesiopruinosa (Nyl.) Imshaug Possibly a synonym of *P. albovirens*?
cocoes (Sw.) Nyl.
coralligera Malme
eschweileri (Tuck.) Vainio
meissneriana Nyl. (Nash et al. 1998)
petricola Nyl.
retirugella Nyl.
sorediata (Ach.) Mont.
subcinerea Stirton (Amtoft 2002)
 chrysanthoides Vainio = *P. subcinerea*
 daedalea Krog & R. Sant. = misidentification for North America
 frostii Tuck. = *Dirinaria frostii*
 meissneri Tuck. = *P. berteriana*
 picta (Sw.) Tuck. = *Dirinaria picta*
 pringlei Imshaug = *P. petricola*

RACIBORSKIOMYCES Siemaszko (Diederich 2003)

***peltigericola** (D. Hawksw.) M. E. Barr Syn.: *Wentomyces peltigericola* (Diederich 2003)

RACODIUM Pers. : Fr.

rupestre Pers.

RAESAENENIA D. Hawksw., Boluda & H. Lindgr.

***huuskonenii** (Räsänen) D. Hawksw., Boluda & H. Lindgr. Syn.: *Phacopsis huuskonenii* (Divakar et al. 2015)

RAMALINA Ach.

ahtii Kashiw. & T. H. Nash

almquistii Vainio Syn.: *Fistulariella almquistii*

americana Hale Earlier North American reports of *R. fastigiata* belong here.

baltica Lettau

bistorta Nyl.

calicaris (L.) Fr.

canariensis J. Steiner

celastri (Sprengel) Krog & Swinscow

complanata (Sw.) Ach.

culbersoniorum LaGreca (LaGreca 1999)

dasypoga Tuck.

dendriscoides Nyl.

denticulata Nyl.

dilacerata (Hoffm.) Hoffm. Syn.: *Fistulariella minuscula*

farinacea (L.) Ach.

fastigiata (Pers.) Ach. Earlier reports of this species from North America refer to *R. americana*

fraxinea (L.) Ach.

geniculata Hooker f. & Taylor Syn.: *Fistulariella geniculata*

inflata (Hooker f. & Taylor) Hooker f. & Taylor subsp. **inflata** Syn.: *Fistulariella inflata*

intermedia (Delise ex Nyl.) Nyl.

lacera (With.) J. R. Laundon

leptocarpha Tuck.

leptosperma Nyl. (Seavey & Seavey 2014a)

linearis (Sw.) Ach.

menziesii Taylor

montagnei De Not.

obtusata (Arnold) Bitter

paludosa B. J. Moore

peruviana Ach. Syn.: *Desmazieria peruviana*

petrina Bowler & Rundel

pollinaria (Westr.) Ach.

polymorpha (Lilj.) Ach.

puberulenta Riefner & Bowler

rigida Pers. ex Ach.

roesleri (Hochst. ex Schaerer) Hue Syn.: *Fistulariella roesleri*

scoparia Vainio Syn.: *Fistulariella scoparia*

sinensis Jatta

sonorensis Kashiw. & T. H. Nash (Kashiwadani & Nash 2004)

sorediantha Nyl.

stenospora Müll. Arg.

subleptocarpha Rundel & Bowler

subpellucida Müll. Arg.

tenuis (Tuck.) G. Merr.

thrausta (Ach.) Nyl. Syn.: *Alectoria thrausta*

unifolia J. W. Thomson

usnea (L.) R. Howe

willeyi R. Howe

canaliculata (Fr.) Herre (Fink 1935) = *Ramalina calicaris* (Nimis & Martellos 2003)

cephalota Tuck. = *Niebla cephalota*

ceruchis (Ach.) De Not. = *Niebla ceruchis*

cochlearis Zahlbr. = misidentification for North America
 combeoides Nyl. = Niebla combeoides
 crinita Tuck. = Trichoramalina crinita
 cuspidata (Ach.) Nyl. (Fink 1935) = misidentification for North America
 duriaei (De Not.) Bagl. = R. lacera
 ecklonii auct. = R. celastri
 ecklonii (Sprengel) G. Meyer & Flotow Not known from North America.
 evernioides Nyl. = R. lacera
 flaccescens Nyl. = Niebla flaccescens
 homalea Ach. = Niebla homalea
 hypoprotocetrarica W. L. Culb. = R. farinacea
 laevigata Fr. = R. celastri
 menziesii Tuck. non Taylor = R. leptocarpha
 minuscula (Nyl.) Nyl. = R. dilacerata
 pollinariella Nyl. = R. roesleri
 populina (Hoffm.) Vainio = R. fastigiata
 reagens (B. de Lesd.) W. L. Culb. = R. farinacea
 reticulata (Nöhden) Kremp. = R. menziesii
 scopulorum (Retz.) Ach. (Fink 1935) = misidentification for North America
 subampliata (Nyl.) Fink = misidentification for North America
 subfraxinea Nyl. (Fink 1935) = misidentification for North America
 testudinaria Nyl. = Niebla homalea
 usneoides (Ach.) Fr. (Fink 1935) = misidentification for North America
 yemensis (Ach.) Nyl. = R. celastri

RAMBOLDIA Kantvilas & Elix

blochiana Lendemer & R. C. Harris (Lendemer & Harris 2011)
cinnabarina (Sommerf.) Kalb, Lumbsch & Elix Syns.: Lecidea cinnabarina, Protoblastenia cinnabarina (Kalb et al. 2008)
elabens (Fr.) Kantvilas & Elix (Kantvilas & Elix 2007) Syns.: Lecidea elabens, L. melancheima, Pyrrhospora elabens
gowardiana (T. Sprib. & Hauck) Kalb, Lumbsch & Elix Syn.: Pyrrhospora gowardiana (Kalb et al. 2008)
russula (Ach.) Kalb, Lumbsch & Elix Syns.: Biatora russula, Lecidea russula, Protoblastenia russula, Pyrrhospora russula (Kalb et al. 2008)
subcinnabarina (Tønsberg) Kalb, Lumbsch & Elix Syns.: Lecidea subcinnabarina, Pyrrhospora subcinnabarina (Kalb et al. 2008)

RAMONIA Stizenb.

ablephora (Nyl. ex Hasse) R. C. Harris Syns.: Lecidea ablephora
absconsa (Tuck.) Vězda
extensa Lendemer, K. Knudsen & Coppins (Lendemer et al. 2009a)
gyalectiformis (Zahlbr.) Vězda
malmei Vězda
microspora Vězda Syn.: Biatorella rappii
rappii Vězda
valenzueliana (Mont.) Stizenb. Syn.: Maronea porinoidea
vermispora Lendemer & K. Knudsen (Lendemer & Knudsen 2008a)

RECHINGERIA Servít = LICHINELLA

cribellifera (Nyl.) Servít = Lichinella cribellifera

RECONDITELLA Matzer & Hafellner

***physconiarum** Matzer & Hafellner (Lendemer et al. 2009b)

REFRACTOHILUM D. Hawksw.

***galligenum** D. Hawksw. (Alstrup & Cole 1998)

***peltigerae** (Keissler) D. Hawksw.

REIMNITZIA Kalb

santensis (Tuck.) Kalb Syns.: *Leptotrema santense*, *Thelotrema santense* (Kalb 2001)

REINKELLA Darb. (Tehler et al. 1997)

californica Räsänen = *Hubbsia californica*

parishii Hasse = *Schizopelte parishii* (Ertz & Tehler 2011)

subcrustacea Räsänen = *Schizopelte parishii* (Ertz & Tehler 2011)

RELICINA (Hale & Kurok.) Hale

abstrusa (Vainio) Hale Syn.: *Parmelia abstrusa*

eximbricata (Gyelnik) Hale Syn.: *Parmelia eximbricata*

REQUIENELLA Fabre

subcollapsa (Ellis & Everhart) R. C. Harris (Harris 1995a)

#**seminuda** (Pers. : Fr.) Boise (Aptroot 1991) European, according to Harris (1995a)

RHABDODISCUS Vainio (Rivas Plata et al. 2012)

emersus (Kremp.) Rivas Plata, Lücking & Lumbsch Syns.: *Ocellularia emersa*, *Stegobolus emersus*

granulosus (Tuck.) Rivas Plata, Lücking & Lumbsch Syns.: *Ocellularia granulosa*, *Stegobolus granulatus*, *Thelotrema granulatum*

RHABDOSPORA (Durieu & Mont.) Mont.

lecanorae B. de Lesd. = pycnidia of *Lecanora thalli* (Hawksworth 1981, Kalb et al. 1995)

RHAGADOSTOMA Körber

***lichenicola** (De Not.) Keissler (Alstrup & Cole 1998)

RHIZOCARPON Ramond ex DC.

alaxense J. W. Thomson

alpicola (Anzi) Rabenh.

amphibium (Fr.) Th. Fr. (Hinds et al. 2002)

anaperum (Vainio) Vainio

anseris Lynge

arctogenum Gelting (Nash et al. 1998)

atroflavescens Lynge

atrovirellum (Nyl.) Zahlbr. (McCune et al. 2014b)

badioatrum (Flörke ex Sprengel) Th. Fr. Syn.: *Buellia badioatra*

bolanderi (Tuck.) Herre

caesium Fryday (Fryday 2002)

chioneum (Norman) Th. Fr.

cinereonigrum Vainio

cinereovirens (Müll. Arg.) Vainio

concentricum (Davies) Beltr.

cookeanum H. Magn.

copelandii (Körber) Th. Fr.

#**dimelaenae** Timdal (Feuerer & Timdal 2004)

***diploschistidina** McCune (Lumbsch et al. 2011)

disporum (Nägeli ex Hepp) Müll. Arg.

distinctum Th. Fr.

#**effiguratum** (Anzi) Th. Fr.

eupetraeoides (Nyl.) Blomb. & Forssell

eupetraeum (Nyl.) Arnold

expallescens Th. Fr.
ferax H. Magn.
frigidum Räsänen
geminatum Körber
geographicum (L.) DC. Syn.: *Buellia geographica*
grande (Flörke ex Flotow) Arnold
hensseniae Brodo
hochstetteri (Körber) Vainio Syn.: *Buellia colludens*, *Lecidea colludens*, *Rhizocarpon colludens*
inarense (Vainio) Vainio
infernum (Nyl.) Lynge (Fryday 2002)
intermediellum Räsänen
intersitum Arnold
jemtlandicum (Malme) Malme
lavatum (Fr.) Hazsl.
lecanorinum Anders
lindsayanum Räsänen Possibly a subspecies of *R. geographicum*
macrosporum Räsänen
malenconianum (Llimona & Werner) Hafellner & Mayrhofer (McCune & Ponzetti 2005)
microsporum Lynge
norvegicum Räsänen
oederi (Weber) Körber
parvum Runemark May not be distinct from *R. norvegicum*
petraeum (Wulfen) A. Massal.
polycarpoides Degel.
polycarpum (Hepp) Th. Fr.
postumum (Nyl.) Arnold
praebadium (Nyl.) Zahlbr.
#pusillum Runemark
quinonum McCune, Timdal & Bendiksbj (McCune et al. 2016)
reductum Th. Fr. (Fryday 2000)
#renneri Poelt
riparium Räsänen Possibly a subspecies of *R. geographicum*
rittokense (Hellbom) Th. Fr.
rubescens Th. Fr. (Fryday 2000)
saanaense Räsänen Syn.: *R. sublucidum*
***santessonii** Timdal
saurinum (W. A. Weber) Bungartz Syn.: *Buellia saurina* (Bungartz & Fryday 2004)
simillimum (Anzi) Lettau
subgeminatum Eitner
submodestum (Vainio) Vainio
sulphurosum (Tuck. ex Willey) Lendemer (Lendemer et al. 2010)
suomiense Räsänen (MacDonald et al. 2011)
superficiale (Schaerer) Vainio
superficiale subsp. **boreale** Runemark
tetramerum (Vainio) Vainio
timdalii Ihlen & Fryday (Ihlen & Fryday 2002)
umbilicatum (Ramond) Flagey
vernicoideum Fink
#viridiatrum (Wulfen) Körber
albineum (Tuck.) Fink = *R. obscuratum*
alboatrum (Hoffm.) Anzi = *Diplotomma alboatrum*
applanatum (Fr.) Th. Fr. (Hambleton 1910) Probable misidentification of *R. hochstetteri*
athalloides (Nyl.) Hasse = *Diploschistella athalloides*
ambiguum (Schaerer) Zahlbr. = *R. distinctum*
atroalbescens (Nyl.) Zahlbr. = *R. eupetraeoides*
chionophilum Th. Fr. = *R. alpicola*

chlorophaeum Hepp ex Leighton = *Diplotomma chlorophaeum*
 colludens (Nyl.) Fryday (Mohr 1901) = *Rhizocarpon hochstetteri*
 concentricum auct. = *R. petraeum*
 concretum (Ach.) Elenkin = *R. geminatum*
 crystalligenum Lynge = *R. superficiale* subsp. *boreale*
 cumulatum J. W. Thomson = *Diplotomma epipolium* (as *Buellia*, Feuerer 1991)
 disporum auct. = *R. geminatum*
 infernulum f. *sylvaticum* Fryday (Fryday 2002) = *R. infernulum*
 intermedium Degel. = *R. eupetraeum*
 interponens (Nyl.) Zahlbr. = *R. obscuratum*
 montagnei Körber = *R. disporum*
 obscuratum (Ach.) A. Massal. = misidentification for North America (Fryday 2000); mostly *R. lavatum*/*R. reductum*
 occidentale Lynge = *R. superficiale*
 oidaleum (Nyl.) Fink = *Buellia oidalea*
 oreites (Vainio) Zahlbr. = *R. alpicola*
 penichrum (Tuck.) G. Merr. = *Diplotomma penichrum*
 permodestum Arnold = *R. obscuratum*
 plicatile auct. North American = *R. rubescens* Th. Fr.?
 plicatile (Leighton) A. L. Sm. = *Stereocaulon plicatile* (Leighton) Fryday & Coppins (Fryday & Coppins 1996) Not known from North America
 polare Räsänen = *R. superficiale*
 sphaerosporum Räsänen = *R. macrosporum* Räsänen
 subconcentricum (Körber) Körber (Mohr 1901) = *R. petraeum*
 sublucidum Räsänen = *R. saanaense* Räsänen.
 subpostumum (Nyl.) Arnold (Knudsen & Kocourková 2009b) = misidentification for N.A. (Knudsen & Kocourková 2012c)
 subtile Runemark = *R. viridiatrum*

RHIZOPLACA Zopf

chrysoleuca (Sm.) Zopf Syns.: *Lecanora chrysoleuca*, *L. rubina*
glaucophana (Nyl. ex Hasse) W. A. Weber Syn.: *Lecanora glaucophana*, *Harpidium glaucophanum*
haydenii (Tuck.) W. A. Weber Syn.: *Lecanora haydenii*
haydenii subsp. **arbuscula** Rosentreter (McCune & Rosentreter 2007)
idahoensis Rosentreter & McCune (McCune & Rosentreter 2007)
marginalis (Hasse) W. A. Weber Syn.: *Lecanora marginalis*
melanophthalma (DC.) Leuckert & Poelt Syn.: *Lecanora melanophthalma*
melanophthalma subsp. **cerebriformis** Rosentreter & B. D. Ryan (McCune & Rosentreter 2007)
melanophthalma subsp. **crispa** Rosentreter & B. D. Ryan (McCune & Rosentreter 2007)
nigromarginata (H. Magn.) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora nigromarginata*
novomexicana (H. Magn.) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syns.: *Lecanora novomexicana*, *L. thomsonii*
opiniconensis (Brodo) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora opiniconensis*
phaedrophthalma (Poelt) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora phaedrophthalma*
subdiscrepans (Nyl.) R. Sant.
weberi (Ryan) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora weberi*
peltata (Ramond) Leuckert & Poelt = *Protoparmeliopsis peltata*

RHYMBOCARPUS Zopf

***boomii** Etayo & Diederich (Diederich & Etayo 2004a)
 ***cruciatus** (Sherwood, D. Hawksw. & Coppins) Etayo & Diederich (Diederich 2003)
 ***neglectus** (Vainio) Diederich & Etayo Syn.: *Llimoniella neglecta* (Diederich & Etayo 2000)
 ***stereocaulorum** (Alstrup & D. Hawksw.) Etayo & Diederich (Zhurbenko 2010)

RIMELIA Hale & Fletcher = **PARMOTREMA** (Blanco et al. 2005)
cetrata (Ach.) Hale & Fletcher = *Parmotrema cetratum*
commensurata (Hale) Hale & Fletcher = *Parmotrema commensuratum*
diffractaica (Essl.) Hale & Fletcher = *Parmotrema diffractaicum*
reticulata (Taylor) Hale & Fletcher = *Parmotrema reticulatum*
simulans (Hale) Hale & Fletcher = *Parmotrema simulans*
subisidiosa (Müll. Arg.) Hale & Fletcher = *Parmotrema subisidiosum*

RIMELIELLA Kurok. = **PARMOTREMA** (Blanco et al. 2005)
conferenda (Hale) Kurok. = *Parmotrema conferendum*
neotropica (Kurok.) Kurok. = *Parmotrema neotropicum*
subsumpta (Nyl.) Kurok. = *Parmotrema subsumptum*
subtinctoria (Zahlbr.) Kurok. = *Parmotrema subtinctorium*

RIMULARIA Nyl.

actinostoma Coppins & Fryday (Coppins & Fryday 2006a)
badioatra (Kremp.) Hertel & Rambold
gibbosa (Ach.) Coppins, Hertel & Rambold Syns.: *Mosigia gibbosa*, *Lecanora bockii*
limborina Nyl. Syns.: *Lecidea limborina*, *L. trochodes*
paradoxa Timdal & W. A. Weber (Timdal 2002b)
caeca (J. Lowe) Rambold & Printzen = *Lambiella caeca* (Resl et al. 2015)
furvella (Nyl. ex Mudd) Hertel & Rambold = *Lambiella furvella* (Resl et al. 2015)
gyrizans (Nyl.) Hertel & Rambold = *Lambiella gyrizans* (Resl et al. 2015)
impavida (Th. Fr.) Hertel & Rambold = *Lambiella impavida* (Resl et al. 2015)
#insularis (Nyl.) Rambold & Hertel = *Lambiella insularis* (Spribille et al. 2014a)
sphacelata (Th. Fr.) Hertel & Rambold = *Lambiella sphacelata* (Resl et al. 2015)

RINODINA (Ach.) Gray

adirondackii H. Magn.
albertana Sheard (Sheard 2010)
archaea (Ach.) Arnold
ascociscana (Tuck.) Tuck.
aspersa (Borrer) J. R. Laundon (Glew 1999)
athallina H. Magn.
aurantiaca Sheard (Sheard & Mayrhofer 2002)
austroborealis Sheard (Sheard 2010)
badiexcipula Sheard (Sheard & Mayrhofer 2002)
bischoffii (Hepp) A. Massal.
bolanderi H. Magn.
boleana Giralt & H. Mayrhofer (Sheard et al. 2011)
boulderensis Sheard (Sheard & Mayrhofer 2002)
brodoana Sheard, Lendemer & E. Tripp (Lendemer et al. 2014)
brouardii B. de Lesd.
buckii Sheard (Sheard et al. 2012)
bullata Sheard & Lendemer (Sheard et al. 2012)
calcigena (Th. Fr.) Lynge
californiensis Sheard (Sheard & Mayrhofer 2002)
campestris Sheard & C. A. Morse (Sheard et al. 2011)
cana (Arnold) Arnold (Wilhelm 1998)
capensis Hampe
castanomela (Nyl.) Arnold
castanomelodes H. Mayrhofer & Poelt
chrysiata Sheard (Lendemer et al. 2012)
chrysomelaena (Ach.) Tuck. (Lendemer & Sheard 2006)
colobina (Ach.) Th. Fr.
colobinoides (Nyl.) Zahlbr.

coloradiana H. Magn.
confragosa (Ach.) Körber
confragosula (Nyl.) Müll. Arg. (Sheard 2010)
conradii Körber
destituta (Nyl.) Zahlbr.
disjuncta Sheard & Tønsberg
dolichospora Malme (Sheard & Mayrhofer 2002)
efflorescens Malme
endophragmia I. M. Lamb
endospora Sheard (Sheard & Mayrhofer 2002)
excrescens Vainio
exigua (Ach.) Gray
fimbriata Körber (Sheard 2010)
flavosoralifera Tønsberg (Tønsberg 2002)
freyi H. Magn. (Sheard 2010)
gennarii Bagl.
grandilocularis Sheard (Sheard & Mayrhofer 2002)
granuligera H. Magn.
griseosoralifera Coppins (Tønsberg 1993a)
guzzinii Jatta (Sheard 2004)
hallii Tuck. Syn. *Lecanora exigua* f. *pruinosa*
herrei H. Magn.
imshaugii Sheard (Sheard 2010)
innata Sheard (Sheard & Mayrhofer 2002)
intermedia Bagl. (Mayrhofer et al. 2001)
intrusa (Nyl.) Malme (Sheard 2010)
juniperina Sheard (Sheard & Mayrhofer 2002)
laevigata (Ach.) Malme
lepida (Nyl.) Müll. Arg.
lobulata H. Mayrhofer & Sheard (Sheard & Mayrhofer 2002)
luridata (Körber) H. Mayrhofer, Scheid. & Sheard
macrospora Sheard (Sheard & Mayrhofer 2002)
maculans Müll. Arg. (Sheard 2010)
marysvillensis H. Magn.
megistospora Sheard & H. Mayrhofer (Sheard et al. 2011)
metaboliza Vainio
milvina (Wahlenb.) Th. Fr.
mniaraea (Ach.) Körber
mniaraea var. **cinnamomea** Th. Fr. (Spribille et al. 2010)
mniaraeiza (Nyl.) Arnold (Resl et al. 2016)
notabilis (Lynge) Sheard Syn.: *Buellia notabilis* (Sheard 2010)
[#]**obnascens** (Nyl.) Oliv. (Sheard 2010)
ochracea Lynge (Sheard et al. 2012)
oleae Bagl. (Sheard 2010)
olivaceobrunnea C. W. Dodge & Baker
orculata Poelt & M. Steiner (Mayrhofer & Sheard 2007)
oregana H. Magn.
oxydata (A. Massal.) A. Massal.
pachysperma H. Magn.
pacifica Sheard (Sheard & Mayrhofer 2002)
pallidescens Sheard & Tønsberg (Sheard et al. 2014)
papillata H. Magn.
[#]**parasitica** H. Mayrhofer & Poelt
perreagens Sheard (Sheard & Mayrhofer 2002)
pityrea Ropin & H. Mayrhofer (Sheard 2011)
poeltiana Giralt & Obermayer (Sheard 2004)

polyspora Th. Fr.
populicola H. Magn.
pycnocarpa H. Magn. (Sheard 2010)
pyrina (Ach.) Arnold
rinodinoides (Anzi) H. Mayrhofer & Scheid. (Sheard 2004)
riparia Sheard (Sheard 1998)
roscida (Sommerf.) Arnold
santae-monicae H. Magn.
septentrionalis Malme
sheardii Tønsberg
sibirica H. Magn. (Sheard 2010)
siouxiana Sheard (Sheard 2010)
stictica Sheard & Tønsberg
straussii J. Steiner (Sheard 2010)
subminuta H. Magn.
subparieta (Nyl.) Zahlbr. (Resl. et al. 2016)
tephraspis (Tuck.) Herre
terrestris Tomin (Zhurbenko et al. 2006)
terricola Sheard & K. Knudsen (Sheard et al. 2011)
trevisanii (Hepp) Körber (Sheard 2004)
turfacea (Wahlenb.) Körber
venostana Buschardt & H. Mayrhofer (Freebury 2014)
verruciformis Sheard (Sheard & Mayrhofer 2002)
wetmorei Sheard (Sheard 2010)
willeyi Sheard & Giralt (Sheard 1995)
zwackhiana (Kremp.) Körber
 americana B. de Lesd. Identity not established (Sheard 2010)
 angelica Stizenb. = *Mobergia angelica*
 annulata H. Magn. = *R. subminuta* (Sheard 2010)
 applanata H. Magn. = *R. maculans* (Sheard 2010)
 archaeoides H. Magn. = *R. olivaceobrunnea*
 arctica H. Magn. = *R. olivaceobrunnea* (Sheard 2010)
 aterrima Kremp. ex Anzi = *Lichenothelia scopularia*
 atrocinerea (Hooker) Körber = misidentification for North America
 biatorina Körber = *R. oxydata*
 biatorina sensu Fink = *R. destituta* (Sheard 2010)
 bolodes Tuck. ex Fink = *Mobergia angelica*
 cacuminum (Th. Fr.) Malme = *Amandinea cacuminum*
 calculiformis W. A. Weber = *Mobergia calculiformis*
 californica H. Magn. = *Dimelaena californica*
 cinereovirens (Vainio) Vainio = *R. turfacea* (Sheard 2010)
 constans (Nyl.) Tuck. = *Maronea constans*
 constrictula H. Magn. = *R. straussii* (Sheard 2010)
 corticola (Arnold) Arnold = *R. capensis*
 dakotensis H. Magn. = *Amandinea dakotensis*
 darrowii E. D. Rudolph ("darrovii") = *R. intermedia*
 degeliana Coppins = *R. subparieta* (Resl. et al. 2016)
 dirinoides Zahlbr. = *Mobergia angelica*
 diskoensis Sheard ined. (Thomson 1997) = *R. endophragmia* (Sheard 2010)
 dissa (Stirton) H. Mayrhofer = *Hafellia dissa*, but not in North America
 exigua var. glauca H. Magn. = *R. oleae* (Sheard 2010)
 euryspora Zahlbr. = *R. luridata*
 farinosa Sheard ined. (Brodo 1988) = *R. efflorescens* (Sheard 2010)
 finkii H. Magn. = *Amandinea dakotensis*
 flavonigella Tuck. = *R. lepida* (Sheard 2010)
 glauca Ropin = *R. freyi* (Sheard 2010)

granulans Vainio sensu Thomson (1997) = *R. sibirica* (Sheard 2010)
halei H. Magn. = *R. subminuta* (Sheard 2010)
hueana Vainio = *Dimelaena oreina*
hyperborea H. Magn. = *R. septentrionalis* (Sheard 2010)
inaequalis H. Magn. = *Amandinea dakotensis*
**insularis* (Arnold) Hafellner (Sheard 2004) = *Endohyalina insularis*
interpolata (Stirton) Sheard (Thomson 1997) = misidentification for *N.A.* (Sheard 2010)
iowensis Zahlbr. = *R. cana* (Sheard 2010)
kentuckyensis Fink = *R. tephrae*
lecanoides B. de Lesd. Identity not established (Sheard 2010)
lecanorina (A. Massal.) A. Massal. = misidentification for *N. A.* (Sheard 2010)
lecideoides (Nyl.) Kernst. = *R. archaea* (Mayrhofer & Sheard 2007)
lignaria H. Magn. = *R. trevisanii*
lignicola Sheard (Sheard & Mayrhofer 2002) = *R. archaea* (Mayrhofer & Sheard 2007)
lycopodiicola B. de Lesd. Identity not established (Sheard 2010)
lyngei Sheard ined. (Thomson 1997) = *R. endophragmia* (Sheard 2010)
magnussonii Sheard ined. (Brodo 1988) = *R. freyi* (Sheard 2010)
mamillana (Tuck.) W. A. Weber = *Buellia mamillana*
marysvillensis var. *thujae* H. Magn. = *R. excrescens* (Sheard 2010)
microbola Tuck. ex Fink = *Buellia microbola*
minutissima B. de Lesd. Identity not established (Sheard 2010)
milliaria Tuck. = *Amandinea milliaria*
mucronatula H. Magn. = *R. terrestris*
nigra Fink = *Buellia nigra*
nimbosa (Fr.) Th. Fr. = *Phaeorrhiza nimbosa*
novomexicana B. de Lesd. = *Dimelaena oreina*
occidentalis Lynge = *R. calcigena*
ocellata (Hoffm.) Arnold = *R. lecanorina*, but a misidentification for *N. A.* (Sheard 2010)
ochrocea Willey ex Hedrick = *R. destituta* (Sheard 2010)
orbata (Ach.) Vainio = *R. turfacea*
oreina (Ach.) A. Massal. = *Dimelaena oreina*
palustris Willey nom. inval. = *R. populicola* (Sheard 2010)
penardiana Müll. Arg. = a *Buellia* sp. (Sheard 2010)
pennsylvanica H. Magn. = *Amandinea dakotensis*
phaeocarpa (Sommerf.) Vainio = *Phaeorrhiza nimbosa*
platyloba Willey = nom. nudum = *Mobergia calculiformis*
pyriniformis H. Magn. = *Amandinea dakotensis*
radiata Tuck. = *Dimelaena radiata*
roboris (Dufour ex Nyl.) Arnold Known only from Mexico
sabulosa Tuck. = *R. intermedia*
salina Degel. = *R. gennarii*
sexigua Ach. (Claassen 1912) Apparent Freudian typographical error for *R. exigua*
silicicola B. de Lesd. Identity not established (Sheard 2010)
sophodes (Ach.) A. Massal. = misidentification for North America
suboreina B. de Lesd. = *Dimelaena oreina*
subsophodes (Nyl. ex Lindsay) Zahlbr. = *R. ascociscana* (Sheard 2010)
succedens Nyl. (Fink 1935) = apparent misidentification for North America (Tucker & Ryan 2006)
subplumbea H. Magn. = *Amandinea dakotensis*
thomae Tuck. (Fink 1935) = *Buellia mamillana* (Bungartz et al. 2004)
thomsonii Sheard (Sheard 1995) = *R. santae-monicae* (Sheard 2010)
thujae (H. Magn.) Sheard = *R. excrescens*
thysanota Tuck. = *Dimelaena thysanota*
vegassii B. de Lesd. Identity not established (Sheard 2010)
verrucosa G. K. Merr. ex Sheard ined. Identity uncertain (Sheard 2010)
vezdae H. Mayrhofer (Harris & Ladd 2005, Lendemer & Macklin 2006) = *R. destituta* (Sheard 2010)
violascens H. Magn. = *R. zwackhiana*

ROBERGEA Desm.

pupula (Nyl.) R. C. Harris Syn.: *Belonia americana* Excluded as a non-lichen

ROCCELLA DC.

decipiens Darb.

gracilis Bory (Tehler 2006)

babingtonii Mont. = *R. decipiens*

babingtonii sensu auct. North American = *R. gracilis* (Tehler 2006)

difficilis Darb. = *R. gracilis* (Tehler 2002b, 2006)

fimbriata Darb. = *R. decipiens* (Tehler 2002b; Tehler et al. 2004)

fuciformis (L.) DC. = misidentification for North America (Tehler et al. 2004)

fucoides (Dickson) Vainio = *R. phycopsis* (Tehler 2002a, 2003)

leucophaea Tuck. = *Dendrographa leucophaea*

montagnei Bél. = misidentification for North America (Tehler et al. 2004)

peruensis Kremp. = *R. gracilis* (Tehler 2006)

phycopsis (Ach.) Ach. = misidentification for North America (Tehler et al. 2004)

tinctoria DC. = misidentification for North America (Tehler et al. 2004)

ROCCELLINA Darb.

conformis Tehler = *Dendrographa conformis* (Ertz & Tehler 2011)

franciscana (Zahlbr. ex Herre) Follmann = *Dendrographa franciscana* (Ertz & Tehler 2011)

ROMJULARIA Timdal

lurida (Ach.) Timdal Syns.: *Mycobilimbia lurida*, *Lecidea lurida*, *L. petri*, *Biatora lurida*, *B. petri*, *Psora lurida* (Timdal 2007)

ROPALOSPORA A. Massal.

chlorantha (Tuck.) S. Ekman Syn.: *Bacidia chlorantha*

hibernica (P. James & Poelt) Tønsberg

lugubris (Sommerf.) Poelt Syns.: *Bacidia lugubris*, *Bilimbia caudata*, *Lecidea lugubris*, *L. caudata*

viridis (Tønsberg) Tønsberg

ROSELLINIELLA Vainio (Goward et al. 1996)

***atlantica** Matzer & Hafellner (Etayo & Breuss 1998)

***cladoniae** (Anzi) Matzer & Hafellner (Diederich 2003)

***microthelia** (Wallr.) Nik. Hoffm. & Hafellner (Kocourková 2007)

***nephromatis** (Crouan) Matzer & Hafellner (Goward et al. 1996)

***peltigericola** D. Hawksw. & Miądl. (Zhurbenko & Laursen 2003)

***stereocaulorum** Zhurb., Kukwa, & Oset (Zhurbenko et al. 2009)

ROSELLINIOPSIS Matzer & Hafellner

***gelidaria** (Mudd) Matzer Syn.: *Polycoccum gelidarium*

***tartaricola** (Nyl.) Matzer (Hafellner 2004e)

***tropica** Matzer & Hafellner (Lendemer & Harris 2014b)

ROSELLINULA R. Sant. (Kalb et al. 1995)

***haplospora** (Nyl.) R. Sant. (Lendemer & Harris 2012)

***kalbii** (Hafellner) Hafellner & R. W. Rogers (Kalb et al. 1995)

ROSTANIA Trevisan (Otálora et al. 2014)

callibotrys (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema callibotrys*

ceranisca (Nyl.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema arcticum*, *C. ceraniscum*

occultata (Bagl.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema occultatum*

quadrifida (D. F. Stone & McCune) McCune (McCune et al. 2014b)

RUFOPLACA Arup, Søchting & Frödén (Arup et al. 2013)

arenaria (Pers.) Arup, Søchting & Frödén Syn.: *Caloplaca arenaria*

oxfordensis (Fink) Arup, Søchting & Frödén Syn.: *Caloplaca oxfordensis*

RUSAVSKIA S. Y. Kondr. & Kärnefelt (Arup et al. 2013)

elegans (Link) S. Y. Kondr. & Kärnefelt Syns.: *Caloplaca elegans*, *C. splendens*, *Placodium elegans*, *Xanthoria elegans*

papillifera (Vainio) S. Y. Kondr. & Kärnefelt Syn.: *Xanthoria papillifera*

sorediata (Vainio) S. Y. Kondr. & Kärnefelt Syns.: *Caloplaca sorediata*, *Xanthoria sorediata*

SACCOMORPHA Elenkin = **PLACYNTHIELLA**

hyporhoda (Th. Fr.) Clauzade & Cl. Roux = *Placynthiella hyporhoda*

icmalea (Ach.) Clauzade & Cl. Roux = *Placynthiella icmalea*

oligotrophia (J. R. Laundon) Clauzade & Cl. Roux = *Placynthiella oligotrophia*

uliginosa (Schrader) Hafellner = *Placynthiella uliginosa*

SAGEDIA Ach. (Nordin et al. 2010)

mastrucata (Wahlenb.) A. Nordin, Savić & Tibell Syns.: *Aspicilia mastrucata*, *Lecanora mastrucata*

simoënsis (Räsänen) A. Nordin, Savić & Tibell Syn: *A. simoënsis*

cestrensis (Tuck.) Tuck. (Mohr 1901) = *Pseudosagedia cestrensis*

SAGEDIOPSIS (Sacc.) Vainio

***aquatica** (Stein) Triebel (Brodo 1995)

***barbara** (Th. Fr.) R. Sant. & Triebel Syn.: *Gongylia nadvornikii*

***campsteriana** (Lindsay) D. Hawksw. & R. Sant. Syn.: *Metasphaeria tartarina*

***lomnitzensis** (Stein) Orange (Spribille et al. 2010)

SAGIOLECHIA A. Massal.

protuberans (Ach.) A. Massal.

rhexoblephara (Nyl.) Zahlbr.

SANGUINOTREMA Lücking

wightii (Taylor) Lücking Syn.: *Leptotrema wightii*, *Myriotrema wightii*, *Thelotrema ravenelii*, *T. wightii* (Lücking et al. 2015)

SANTESSONIELLA Henssen (Henssen 1997)

arctophila (Th. Fr.) Henssen var. **arctophila** Syn.: *Parmeliella arctophila* (Henssen 1997)

crossophylla (Tuck.) P. M. Jørg. Syns.: *Parmeliella crossophylla*, *Pannaria crossophylla* (Jørgensen 2000c, 2005)

grisea (Hue) Henssen (Tønsberg & Henssen 1999)

saximontana T. Sprib., P. M. Jørg. & M. Schultz (Spribille et al. 2007) = *Leciophysma saximontana* (Ekman et al. 2014)

SARCOGRAPHA Fée

labyrinthica (Ach.) Müll. Arg.

medusulina (Nyl.) Müll. Arg.

tricosa (Ach.) Müll. Arg.

intricans (Nyl.) Müll. Arg. = *Phaeographis intricans*

SARCOGYNE Flotow

albothallina K. Knudsen, T. B. Wheeler, Kocourk. & M. Westb. (Knudsen et al. 2016)

arenosa (Herre) Knudsen & S. M. Standley (Knudsen 2005b) Syn.: *Acarospora arenosa*

clavus (DC.) Kremp. Syn.: *Biatorella clavus*

crustacea K. Knudsen & Kocourk. (Knudsen & Kocourková 2010a) Syn.: *Biatorella terrena*

dakotensis H. Magn.

desolata (H. Magn.) K. Knudsen & Standley Syn.: *Acarospora desolata* (Knudsen & Standley 2007)

hypophaea (Nyl.) Arnold Syn.: *Biatorella hypophaea* (Knudsen et al. 2013b)
integra (B. de Lesd.) H. Magn.
magnussonii B. de Lesd.
mitziae K. Knudsen, Kocourk. & McCune (Knudsen et al. 2013a)
novomexicana H. Magn.
plicata H. Magn. (Knudsen & Kocourková 2009a, 2011) Syn.: *Biatorella plicata*
reebiae K. Knudsen (Knudsen & Standley 2007)
regularis Körber Syns.: *Biatorella pruinosa*
similis H. Magn.
***sphaerospora** J. Steiner (Lendemer et al. 2009b)
squamosa K. Knudsen & McCune (Knudsen & McCune 2013)
athroocarpa H. Magn. = *Acarospora badiofusca* (Knudsen & Kocourková 2013)
***bicolor** H. Magn. = *Polysporina subfuscescens* (Knudsen & Kocourková 2008a)
bolleana H. Magn. = *S. arenosa* (Lendemer et al. 2009c)
californica H. Magn. = *S. similis* (Knudsen & Lendemer 2005a)
lapponica (Ach. ex Schaerer) K. Knudsen & Kocourk. (Knudsen 2005c) N.A. reports are *Polysporina subfuscescens* (Knudsen & Kocourková 2008a)
oligospora H. Magn. = *Polysporina gyrocarpa*
privigna auct. = *S. hypophaea* (Knudsen et al. 2013b)
pruinosa auct. = *S. regularis*
simplex (Davies) Nyl. = *Polysporina simplex*

SARCOPYRENIA Nyl. (Harris 1995b)

***bacillosa** (Nyl. ex Hasse) Nav.-Ros. & Hladun Syns.: *Hassea bacillosa*, *Verrucaria bacillosa* (Navarro-Rosinés & Hladun 2004)
***calcareia** Lendemer & R. C. Harris (Lendemer et al. 2013)
***cylindrospora** (P. Crouan & H. Crouan) M. B. Aguirre (Harris 1995b)

SARCOSAGIUM A. Massal.

campestre (Fr.) Poetsch & Schiedem. Syn.: *Biatorella campestris*

SAREA Fr.

⁺**difformis** (Fr.) Fr.
⁺**resinae** (Fr.) Kuntze Syn.: *Biatorella resinae*

SCHADONIA Körber

alpina Körber Syns.: *Lopadium alpinum*, *L. gemellum*
fecunda (Th. Fr.) Vězda & Poelt Syn.: *Lopadium fecundum*

SCHAERERIA Körber

brunnea Björk, T. Sprib. & T. B. Wheeler (Spribille et al. 2009)
cinereorufa (Schaerer) Th. Fr. Syn.: *Lecidea cinereorufa*, *L. rugosa*
corticola Muhr & Tønsberg
dolodes (Nyl.) Schmull & T. Sprib. (Schmull & Spribille 2005)
endocyanea (Stirton) Hertel & Gotth. Schneider Syn.: *Lecidea epiiodiza*
fuscocinerea (Nyl.) Clauzade & Cl. Roux Syns.: *Aspicilia quartzitica*, *Lecidea fuscocinerea*, *L. tenebrosa*
[#]**parasemella** (Nyl.) Lumbsch Syns.: *Hafellnera parasemella*, *Lecidea parasemella* (Lumbsch 1997)
tenebrosa (Flotow) Hertel & Poelt = *S. fuscocinerea*

SCHISMATOMMA Flotow & Körber ex A. Massal.

glaucescens (Nyl. ex Willey) R. C. Harris Syn.: *Arthonia glaucescens*
pericleum (Ach.) Branth & Rostrup
rappii (Zahlbr.) R. C. Harris Syn.: *Haematomma rappii*
rediunta (Hasse) Tehler Syn.: *Dirina rediunta*
vernans (Tuck.) Zahlbr.

abietinum (Humb.) A. Massal. = *S. pericleum*
californicum (Tuck.) Zahlbr. = *Sigridia californica*
cupressum Herre = *Dendrographa franciscana*
decolorans (Turner & Borrer ex Sm.) Clauz. & Vězda = *Dendrographa decolorans* (Ertz & Tehler 2011)
hypothallinum (Zahlbr.) Hasse = *Lecanographa hypothallina*
ocellatum (Nyl.) Zahlbr. = *Mazosia ocellata*
palidellum auct. = *Enterographa anguinella*
pluriloculare (Zahlbr.) Zahlbr. (Tehler 2002c) = *Paraschismatomma pluriloculare* (Ertz & Tehler 2011)
ravenelii (Tuck.) Zahlbr. = *Opegrapha ravenelii*
subattingens (Nyl.) Zahlbr. = *Lecanactis epileuca*

SCHIZOPELTE Th. Fr.

californica Th. Fr. Syn.: *Combea californica*
crustosa Ertz & Tehler (Ertz & Tehler 2011) Syns.: *Chiodecton californicum*, *Llimonaea californica*, *Sclerophyton californicum*
parishii (Hasse) Ertz & Tehler (Ertz & Tehler 2011)
lumbricoides (W. A. Weber) Ertz & Tehler (Ertz & Tehler 2011) Previously regarded as a synonym of *Hubbsia californica*, but when recognized as separate, it is known only from Mexico

SCLEROCOCCUM Fr.

***montagnei** Hafellner (Diederich 2004a)
***simplex** D. Hawksw. (Cole & Hawksworth 2001)
***parmeliae** Etayo & Diederich (Kocourková & Knudsen 2009d) = *Cladophialophora parmeliae*

SCLEROPHORA Chevall.

amabilis (Tibell) Tibell (Goward et al. 1996)
coniophaea (Norman) J.-E. Mattsson & Middelb. (Goward et al. 1996)
farinacea (Chevall.) Chevall.
nivea (Hoffm.) Tibell Syns.: *Coniocybe nivea* (Hoffm.) Arnold non Tuck. & Mont., *C. pallida*
peronella (Ach.) Tibell (Goward et al. 1996)

SCLEROPHYTON Eschw.

elegans Eschw. Syns.: *Chiodecton inscriptum*, *Enterographa elegans* (Sparrius 2004b)
seriale (Ach.) Sparrius (Seavey & Seavey 2014a)
californicum (Tuck.) Hasse = *Schizopelte crustosa*
cerebriforme Egea & Torrente = *Sparria cerebriformis*
inscriptum (Nyl.) Müll. Arg. = *S. elegans*
occidentale Herre = *Dactylospora* cf. *parasitica*, on a *Pertusaria* sp. (Sparrius 2004b)

SCOLICIOSPORUM A. Massal.

abietinum T. Sprib. (Spribille et al. 2009)
chlorococcum (Stenh.) Vězda Syn.: *Bacidia chlorococca*
intrusum (Th. Fr.) Hafellner Syn.: *Carbonea intrusa* (Hafellner 2004c)
pensylvanicum R. C. Harris (Harris 2009)
pruinsum (P. James) Vězda (Tønsberg 1997 [1998])
sarothamni (Vainio) Vězda
umbrinum (Ach.) Arnold Syn.: *Bacidia umbrina*
umbrinum var. **compacta** (Körber) Vězda

SCULPTOLUMINA Marbach

japonica (Tuck.) Marbach Syn.: *Buellia japonica* (Giralt et al. 2009)

SCUTULA Tul.

***cladoniicola** Alstrup & D. Hawksw. (Hansen & Alstrup 1995)
***dedicata** Triebel, Wedin & Rambold (Triebel et al. 1997)
***epiblastematica** (Wallr.) Rehm (Triebel et al. 1997)

- ***heeri** (Hepp.) Trevisan (Spribille et al. 2010)
- ***miliaris** (Wallr.) Trevisan
- ***stereocaulorum** (Anzi) Körber
- ***tuberculosa** (Th. Fr.) Rehm (Wedin et al. 2007)

SCYTINIUM (Ach.) Gray (Otálora et al. 2014)

- apalachense** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: Collema apalachense, Leptogium apalachense
- aquale** (Arnold) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium aquale
- aragonii** (Otálora) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium aragonii
- californicum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium californicum
- callopismum** (A. Massal.) Otálora, P. M. Jørg. & Wedin Syns.: Collema callopismum, C. callopismum var. rhyarodes
- cellulosum** (P. M. Jørg. & Tønsberg) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium cellulosum
- contortum** (Sierk) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium contortum
- dactylinum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium dactylinum
- erectum** (Sierk) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium erectum
- fragrans** (Sm.) Ach. Syns.: Collema fragrans, C. microphyllum
- gelatinosum** (With.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium gelatinosum, L. scotinum, L. sinuatum
- imbricatum** (P. M. Jørg.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium imbricatum
- intermedium** (Arnold) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium intermedium
- juniperinum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium juniperinum
- kauaiense** (H. Magn.) Otálora, P. M. Jørg. & Wedin Syn.: Collema kauaiense
- lichenoides** (L.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium lacerum, L. lichenoides
- palmatum** (Hudson) Gray Syns.: Leptogium corniculatum, L. palmatum
- parculum** (Nyl.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium parculum
- platynum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium platynum
- plicatile** (Ach.) Otálora, P. M. Jørg. & Wedin Syns.: Collema plicatile, Leptogium microdium, L. plicatile
- polycarpum** (P. M. Jørg. & Goward) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium polycarpum
- pulvinatum** (Hoffm.) Otálora, P. M. Jørg. & Wedin (McCune et al. 2014b)
- rivale** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium rivale, Polychidium rivale
- schraderi** (Bernh.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium schraderi
- siskiyouensis** (D. F. Stone & Ruchty) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium siskiyouensis
- subaridum** (P. M. Jørg. & Goward) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium subaridum
- subtile** (Schrader) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium minutissium, L. perminutum, L. subtile
- tacomae** (P. M. Jørg. & Tønsberg) McCune (McCune et al. 2014b) Syn.: Leptogium tacomae
- tenuissimum** (Dickson) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium lividofuscum, L. tenuissimum
- teretiusculum** (Wallr.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium intricatulum, L. teretiusculum
- turgidum** (Ach.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium turgidum

SECOLIGA Norman = GYALECTA

- carneoluteola (Tuck.) Müll. Arg. (Fink 1935) = Cryptolechia carneoluteola (Tuck.) Kalb Probable misidentification for North America (Esslinger & Tucker 2009)
- geoica (Wahlenb. ex Ach.) Körber = Gyalecta geoica

SEGESTRIA Fr. (Harris 1995a)

- lectissima** Fr. Syn.: Porina lectissima (Harris 1995a)
- leptalea** (Durieu & Mont.) R. C. Harris Syn.: Porina leptalea (Harris 1995a)
- mammillosa** Th. Fr. Syn.: Porina mammillosa (Harris 1995a)
- octomera** (Müll. Arg.) R. C. Harris (Harris 1995a)
- rubentior** (Stirton) R. C. Harris (Harris 1995a)
- nucula Fr. (Mohr 1901) = Porina nucula

SEIROPHORA Poelt (Frödén & Lassen 2004)

aurantiaca (R. Br.) Frödén Syn.: *Teloschistes arcticus* (Frödén & Lassen 2004)

californica (Sipman) Frödén Syn.: *Teloschistes californicus*

contortuplicata (Ach.) Frödén Syn.: *Teloschistes contortuplicatus*

SIGRIDEA Tehler

californica (Tuck.) Tehler Syn.: *Dirina californica*, *D. hassei*, *Platygrapha californica*, *Schismatomma californicum*

SILOBIA M. Westb. & Wedin (Westberg et al. 2011a) = **MYRIOSPORA** Nägeli ex Uloth (Arcadia & Knudsen 2012)

hassei (Herre) K. Knudsen (Knudsen 2011b) = *Myriospora hassei* (Arcadia & Knudsen 2012)

rhagadiza (Nyl.) M. Westb. (Westberg et al. 2011a) = *Myriospora rhagadiza* (Arcadia & Knudsen 2012)

scabrida (H. Magn.) M. Westb. (Westberg et al. 2011a) = *Myriospora scabrida* (Arcadia & Knudsen 2012)

smaragdula (Wahlenb.) M. Westb. & Wedin (Westberg et al. 2011a) = *Myriospora smaragdula* (Arcadia & Knudsen 2012)

SIPHULA Fr.

ceratites (Wahlenb.) Fr.

dactyliza Nyl. = a *Stereocaulon* spp. (Kantvilas 2002)

simplex (Taylor) Nyl. = *S. ceratites*

SKYTTEA Sherwood, D. Hawksw. & Coppins

***caesii** Diederich & Etayo (Diederich & Etayo 2000)

***cismonicae** Hafellner (Hafellner 2000)

***dacampiae** Zhurb. (Zhurbenko 2013)

***elachistophora** (Nyl.) Sherwood & D. Hawksw.

***gregaria** Sherwood, D. Hawks. & Coppins (Diederich & Etayo 2000)

***insignis** Driscoll, S. R. Clayden & R. C. Harris (Driscoll et al. 2016)

***lecanorae** Diederich & Etayo (Diederich & Etayo 2000)

***mayrhoferi** Diederich & Etayo (Diederich & Etayo 2000)

***nitschkei** (Körber) Sherwood, D. Hawks. & Coppins (Diederich & Etayo 2000)

***pertusariicola** Diederich & Etay (Diederich & Etayo 2004b)

***radiatilis** (Tuck.) R. Sant., Etayo & Diederich (Diederich & Etayo 2000)

***richardsonii** Iturr. & D. Hawksw. (Iturriaga & Hawksworth 2004)

***tavaresae** R. Sant., Etayo & Diederich (Diederich & Etayo 2000)

***tephromelarum** Kalb & Hafellner (Diederich & Etayo 2004b)

SKYTTELLA D. Hawksw. & R. Sant.

***mulleri** (Willey) D. Hawksw. & R. Sant.

SOLENOPSORA A. Massal.

candicans (Dickson) J. Steiner

cladonioides B. D. Ryan & Timdal (Ryan & Timdal 2002, 2011)

crenata (Herre) Zahlbr.

cyathiformis (Szatala) van den Boom Syn.: *Lecania cyathiformis* (van den Boom & Ryan 2004b)

holophaea (Mont.) Samp. Syn.: *Lecanora holophaea*, *Candelariella holophaea*

hassei (Zahlbr.) Zahlbr. = *Lecania hassei* (Zahlbr.) W. Noble

SOLITARIA Arup, Söchting & Frödén (Arup et al. 2013)

chrysophthalma (Degel.) Arup, Söchting & Frödén Syn.: *Caloplaca chrysophthalma*

SOLORINA Ach.

bispora Nyl.

bispora var. **subspungiosa** (Zschacke) Frey (Zhurbenko et al. 2006)

crocea (L.) Ach.
monospora Gyelnik (McCune et al. 2014b)
octospora (Arnold) Arnold
saccata (L.) Ach.
spongiosa (Ach.) Anzi

SOLORINARIA (Vainio) Gyelnik
despreauxii (Mont.) Fink = *Heppia despreauxii*

SOLORINELLA Anzi = **GYALIDEA** (Aptroot & Lücking 2003)
asteriscus Anzi = *Gyalidea asteriscus* (Aptroot & Lücking 2003)

SPARRIA Ertz & Tehler (Ertz & Tehler 2011)
cerebriformis (Egea & Torrente) Ertz & Tehler Syn.: *Llimonaea cerebriformis*, *Sclerophyton cerebriforme*

SPEERSCHNEIDERA Trevisan
euploca (Tuck.) Trevisan Syn.: *Teloschistes euplocus*

SPHAERELLOTHECIUM Zopf

***abditum** Triebel
***araneosum** (Rehm ex Arnold) Zopf
***atryneae** (Arnold) Cl. Roux & Triebel (Hafellner et al. 2002)
***breussii** K. Knudsen, Kocourk. & Etayo (Knudsen, Kocourková & Etayo 2009)
***cladoniae** (Alstrup & Zhurb.) Hafellner (Knudsen & Kocourková 2010b)
***cladoniicola** E. S. Hansen & Alstrup (Hansen & Alstrup 1995)
***coniodes** (Nyl.) Cl. Roux & Diederich (Hodkinson et al. 2009)
***contextum** Triebel
#**gowardii** Alstrup & M. S. Cole (Alstrup & Cole 1998)
***minutum** Hafellners
***parmeliae** Diederich & Etayo (Diederich 2003)
***propinquellum** (Nyl.) Cl. Roux & Triebel Syn.: *Stigmidium congestum* (for North America)
***reticulatum** (Zopf) Etayo Syn.: *Echinothecium reticulatum* (Kocourková et al. 2008)
***stereocaulorum** Zhurb. & Triebel (Zhurbenko 2010)
***thamnoliae** Zhurb. (Zhurbenko 2012)
**araneosum* var. *cladoniae* Alstrup & Zhurb. (Zhurbenko & Alstrup 2004) = *S. cladoniae*

SPHAERIA Haller = **HYPOXYLON**
bignoniae Schwein. = *Granulopyrenis hymnothora*

SPHAEROPEZIA Sacc. (Baloch et al. 2013b)

***bryoriae** (Diederich & Etayo) Baloch & Wedin Syn.: *Odontotrema intermedia*
***cucularis** (Norman) Baloch & Wedin Syn.: *Lethariicola cuculuris*
***intermedia** (Diederich, Zhurb. & Etayo) Baloch & Wedin Syn.: *Odontotrema intermedium*
***lecanorae** (Diederich & G. Marson) Baloch & Wedin Syn.: *Odontotrema lecanorae*
***melaneliae** (Diederich & Zhurb.) Baloch, Gilenstam & Wedin Syn.: *Odontotrema melaneliae*
***mycoblasti** Diederich, Baloch & Wedin (Baloch et al. 2013b)
***ochrolechia** (Diederich, Holien & Zhurb.) Baloch & Wedin Syn.: *Odontotrema ochrolechia*
***santessonii** (Zhurb., Etayo & Diederich) Baloch & Wedin Syn.: *Odontotrema santessonii*
***sipei** (Grumann) Baloch & Wedin Syn.: *Lethariicola sipei*, *Odontotrema sipei*
***thamnoliae** (Zhurb., Diederich & Etayo) Baloch & Wedin Syn.: *Odontotrema thamnoliae*

SPHAEROPHORUS Pers.

fragilis (L.) Pers.
globosus (Hudson) Vainio
tuckermanii Räsänen (Wedin et al. 2009)

venerabilis Wedin, Högnabba & Goward (Wedin et al. 2009)
globiferus (L.) D.C. var. **gracilis** Müll. Arg. = **S. tuckermanii** (Wedin et al. 2009)
globosus var. **gracilis** auct. = **S. tuckermanii**
melanocarpus (Sw.) DC. = **Bunodophoron melanocarpus**

SPHAERULINA Sacc.

***dolichotera** (Nyl.) Vouax (Esslinger & Egan 1995)

SPHINCTRINA Fr.

***anglica** Nyl. Syn.: **Mycocalicium microcephalum**, **Calicium microcephalum**
***benmargana** Selva (Selva 2004)
***leucopoda** Nyl.
***pallidella** (Willey) Selva (Selva 2004)
***tubaeformis** A. Massal.
***turbinata** (Pers. : Fr.) De Not. Syn.: **Calicium turbinatum**
***gelasinata** (With.) Zahlbr. (Fink 1935) = **S. turbinata** (Santesson et al. 2004)
***microcephala** (Sm.) Körber = **S. anglica**
***microcephala** Nyl. = **S. tubaeformis**

SPHINCTRINELLA Nádv. = **MYCOCALICIUM**

calicioides Nádv. = **Mycocalicium calicioides**

SPILONEMA Bornet

americanum (Henssen & Tønsberg) T.Sprib., Muggia & Tønsberg Syn.: **Spilonemella americana** (Spribille et al. 2014b)
paradoxum Bornet
revertens Nyl.
dendroides Henssen = **Erinacellus dendroides** (Henssen) T. Sprib., Muggia & Tønsberg (Spribille et al. 2014b)

SPILONEMELLA Henssen & Tønsberg (Henssen & Tønsberg 2000)

americana Henssen & Tønsberg = **Spilonema americanum** (Spribille et al. 2014b)

SPIROGRAPHA Zahlbr.

***fusisporella** (Nyl.) Zahlbr. (Alstrup & Cole 1998)

SPORASTATIA A. Massal.

polyspora (Nyl.) Grumann
testudinea (Ach.) A. Massal. Syn.: **Biatorella kulshanensis**, **B. testudinea**
cinerea (Schaerer) Körber = **S. polyspora**

SPORODICTYON A. Massal.

cruentum (Körber) Körber Syn.: **Polyblastia cruenta** (Fryday 2006, Savić & Tibell 2009, Spribille et al. 2010)
minutum Savić & Tibell (McCune et al. 2014b)
terrestre (Th. Fr.) Savić & Tibell Syn. : **Polyblastia terrestris** (Savić & Tibell 2009), **Verrucaria obtenta** (Dillman et al. 2012)

SPORODOPHORON Frisch, Y. Ohmura, Ertz & G. Thor (Frisch et al. 2015)

americanum (Lendemer, E. Tripp & R. C. Harris) Ertz & Frisch (Frisch et al. 2015)

SPOROPodium Mont.

marginatum Lücking & Lumbsch (Lücking et al. 2011b)
phyllocharis (Mont.) A. Massal.

SPOROSTIGMA Grube**melasporum** (Tuck.) Grube Syn. *Arthonia melaspora* (Grube 2001)**SQUAMARINA** Poelt**cartilaginea** (With.) P. James**lentigera** (Weber) Poelt Syn.: *Lecanora lentigera***crassa** (Hudson) Poelt = *S. cartilaginea***degelii** Poelt = *Lecanora neodegelii***SQUAMULEA** Arup, Söchting & Frödén (Arup et al. 2013)**galactophylla** (Tuck.) Arup, Söchting & Frödén Syn.: *Caloplaca galactophylla*, *Placodium galactophylla***parviloba** (Wetmore) Arup, Söchting & Frödén Syn.: *Caloplaca parviloba***squamosa** (B. de Lesd.) Arup, Söchting & Frödén Syn.: *Caloplaca squamosa***subsoluta** (Nyl.) Arup, Söchting & Frödén Syn.: *Caloplaca irubescens*, *C. modesta*, *C. subsoluta***STAUROLEMMMA** Körber**carolinianum** P. M. Jørg. (Jørgensen 2004)**STAUROTHELE** Norman**arctica** Lynge**areolata** (Ach.) Lettau**bacilligera** (Arnold) Arnold (Lendemer 2008)**clopimoides** (Bagl. & Carestia) J. Steiner**discedens** (Nyl.) Zahlbr.**drummondii** (Tuck.) Tuck. Syn.: *Endocarpon drummondii*, *E. wilmsoides***effigurata** J. W. Thomson**elenkinii** Oxner**fissa** (Taylor) Zwackh**frustulenta** Nyl. (McCune et al. 2014b)**guestphalica** (Lahm ex Körber) Arnold (Lendemer 2008)**lecideoides** B. de Lesd.**monicae** (Zahlbr.) Wetmore Syn.: *Endocarpon monicae***orispruinosa** J. W. Thomson**polygonia** B. de Lesd.**rugosa** J. W. Thomson**rupifraga** (A. Massal.) Arnold Syn. : *Verrucaria terebrata***verruculosa** J. W. Thomson*ambrosiana* (A. Massal.) Zschacke = *S. drummondii* for North American records*circinata* Tuck. = *S. fissa**catalepta* auct. N. Am. = mostly *S. monicae**clopima* (Wahlenb.) Th. Fr. [epithet to be proposed for rejection under I.C.B.N. Art.69 (Thomson 1991)] = *S. drummondii**diffractella* (Nyl.) Tuck. = *Endocarpon diffractellum**fuscocuprea* (Nyl.) Zschacke = *S. drummondii**glacialis* Herre = *S. fissa**hazslinskyi* (Körber) J. Steiner = *S. fissa**hymenogonia* (Nyl.) Th. Fr. = *S. discedens* for North American records*perradiata* Lynge = *S. drummondii**rufa* (A. Massal.) Zschacke = *S. elenkinii* for North American records*sessilis* H. Magn. = *S. elenkinii**succedens* (Rehm) Arnold = *S. drummondii* for North American record*tenuissima* Degel. = *Endocarpon tenuissimum**umbrina* (Wahlenb.) Hellb. = *S. fissa*

STEGOBOLOUS Mont.

aubertianus (Mont.) A. Frisch & Kalb Syns.: *Leptotrema aubertianum*, *Ocellularia aubertiana* (Frisch & Kalb 2006)

emersus (Kremp.) Frisch & Kalb = *Rhabdodiscus emersus* (Rivas Plata et al. 2012)

granulosus (Tuck.) A. Frisch = *Rhabdodiscus granulosus* (Rivas Plata et al. 2012)

STEINEROPSIS T. Sprib. & Muggia (Spribille et al. 2010)

alaskana T. Sprib. & Muggia (Spribille et al. 2010)

STEINIA Körber

geophana (Nyl.) Stein Syns.: *Lecidea geophana*, *Biatorella geophana*

STENOCYBE (Nyl.) Körber

⁺**clavata** Tibell

⁺**flexuosa** Selva & Tibell (Selva & Tibell 1999)

⁺**fragmenta** E. B. Peterson & Rikkinen (Peterson & Rikkinen 1998)

⁺**major** Nyl. ex Körber

⁺**pullatula** (Ach.) Stein

⁺**byssacea** (Fr.) Körber = *S. pullatula*

⁺**euspora** (Nyl.) Anzi = (?) *S. major*

⁺**minutissima** (G. Merr.) Zahlbr. = *Phaeocalicium minutissimum*

⁺**tremulicola** Norrlin ex Nyl. = *Phaeocalicium tremulicola*

STEREOCAULON Hoffm.

alpinum Laurer ex Funck

apocalypticum Nyl

arcticum Lynge

arenarium (Savicz) I. M. Lamb

botryosum Ach.

capitellatum H. Magn.

condensatum Hoffm.

coniophyllum I. M. Lamb

[**Siphula dactyliza** Nyl.] (Kantvilas 2004)

dactylophyllum Flörke

dactylophyllum var. **occidentale** (H. Magn.) I. M. Lamb

depreaultii Delise ex Nyl.

depressum (Frey) I. M. Lamb (Zhurbenko et al 2006)

glareosum (Savicz) H. Magn.

glaucescens Tuck.

glaucescens var. **caespitosulum** (Nyl.) I. M. Lamb

grande (H. Magn.) H. Magn.

groenlandicum (E. Dahl) I. M. Lamb

incrustatum Flörke

intermedium (Savicz) H. Magn.

klondikense T. Sprib. (Spribille et al. 2010)

leucophaeopsis (Nyl.) P. James & Purvis (Fryday 2010)

leprocephalum Vainio

microcarpum Müll. Arg.

myriocarpum Th. Fr.

nanodes Tuck.

nivale (Follmann) Fryday Syn.: *Bacidia nivalis* (Fryday & Glew 2003)

octomerum Müll. Arg.

paschale (L.) Hoffm.

pileatum Ach.

plicatile (Leighton) Fryday & Coppins (Fryday 2006)

rivulorum H. Magn.

sasakii Zahlbr. var. **simplex** (Riddle) I. M. Lamb
sasakii var. **tomentosoides** I. M. Lamb
saviczii Du Rietz
saxatile H. Magn.
spathuliferum Vainio
sterile (Savicz) I. M. Lamb ex Krog
subcoralloides (Nyl.) Nyl.
subdenudatum Hav. (Spribille et al. 2010)
symphycheilum I. M. Lamb
taeniarum (H. Magn.) Kivistö (Kivistö 1998)
tennesseense H. Magn. ex Degel.
tennesseense H. Magn. ex Degel. var. **nigrofastigiatum** I. M. Lamb
tomentosum Fr.
vesuvianum Pers.
albicans Th. Fr. = *Lepraria albicans*
arbuscula Nyl. = *Lepraria arbuscula*
coralloides Fr. = *S. dactylophyllum*
denudatum Flörke = *S. vesuvianum*
evolutoides (H. Magn.) Frey = *S. saxatile*
microscopicum (Vill.) Frey = *Leprocaulon quisquiliare*, but N.A. records are *L. americanum*
pseudoarbuscula Asahina = *Lepraria subalbicans* for North American records
quisquiliare (Leers) Hoffm. = *Leprocaulon quisquiliare*, but N.A. records are *L. americanum*
ramulosum Raeuschel = not in North America north of Mexico
subalbicans I. M. Lamb = *Lepraria subalbicans*
uliginosum I. M. Lamb Known from Greenland but not from the United States or Canada.
wrightii Tuck. = not in North America

STICTA (Schreber) Ach.

arctica Degel.
beauvoisii Delise
canariensis (Bory) Bory ex Delise
carolinensis T. McDonald (McDonald et al. 2003)
deyana Lendemer & Goffinet (Lendemer & Goffinet 200015)
fragilinata T. McDonald (McDonald et al. 2003)
fuliginosa (Hoffm.) Ach.
leucoblephara (Müll. Arg.) D. J. Galloway (Galloway & Thomas 2004)
limbata (Sm.) Ach.
sylvatica (Hudson) Ach.
xanthotropa (Kremp.) D. J. Galloway (Galloway & Thomas 2004)
amplissima (Scop.) Rabenh. (Fink 1935) = *Lobaria amplissima*
anthraspis Ach. = *Lobaria anthraspis*
aurata Ach. = *Crocodia aurata*
crocata (L.) Ach. = *Pseudocyphellaria crocata*
drummondii Taylor = *Nephroma resupinatum*
erosa (Eschw.) Tuck. = *Lobaria ravenelii*
glomulifera (Lightf.) Delise = *Lobaria amplissima*
hallii Tuck. = *Lobaria hallii*
herbacea (Hudson) Ach. = misidentification for North America
laciniata Ach. = misidentification for North America
linita Ach. = *Lobaria linita*
oregana Tuck. = *Lobaria oregano*
oroborealis Goward & Tønsberg (Tønsberg & Goward 2001) = *Dendriscosticta oroborealis* (Moncada et al. 2013)
pulmonaria (L.) Birolì = *Lobaria pulmonaria*
quercizans (Michaux) Ach. (Fink 1935) = *Lobaria quercizans*
verrucosa (Hudson) Fink = *Lobaria scrobiculata*

weigeli (Ach.) Vainio = misidentification for North America
wrightii Tuck. = Dendriscosticta wrightii (Moncada et al. 2013)

STICTIS Pers.: Fr.

urceolatum (Ach.) Gilenstam Syn.: Conotrema urceolatum (Wedin et al. 2005)

STIGMIDIUM Trevisan

- ***beringicum** Zhurb. & Triebel (Zhurbenko 2010)
- ***californicum** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010f)
- ***cerinae** Cl. Roux & Triebel (Cole & D. Hawksworth 2001)
- ***congestum** (Körber) Triebel (Driscoll et al. 2016) An earlier N.A. report was based on *Sphaerellothecium propinquellum* (Esslinger & Egan 1995)
- ***conspurcans** (Th. Fr.) Triebel & R. Sant. (Spribille et al. 2010)
- ***croceae** (Arnold) Cl. Roux & Triebel (Zhurbenko & Daniëls 2003)
- ***ephebes** (Henssen) D. Hawksw. Syn.: *Pharcidia ephebes* (Henssen) D. Hawksw.
- ***epistigmellum** (Nyl. ex Vouaux) Kocourk. & K. Knudsen (Kocourková & Knudsen 2009c)
- ***epixanthum** Hafellner (Hafellner et al. 2002)
- ***frigidum** (Sacc.) Alstrup & D. Hawksw.
- ***fuscatae** (Arnold) R. Sant.
- ***glebarum** (Arnold) Hafellner (Etayo & Breuss 1998)
- ***gyrophorarum** (Arnold) D. Hawksw. (Hafellner et al. 2002)
- ***hesperium** Kocourk., K. Knudsen, & Diederich (Kocourková & Knudsen 2009b)
- ***lendemerii** Kocourk. & K. Knudsen (Kocourková et al. 2012, Kocourková & Knudsen 2012)
- ***marinum** (Deakin) Swinscow
- ***microcarpum** Alstrup & J. C. David (Zhurbenko 2009b)
- ***mitchellii** Cl. Roux & Bricaud (Zhurbenko 2013)
- ***mycobilimbiae** Cl. Roux, Triebel & Etayo (Diederich 2003)
- ***[Pharcidia parva]** Henssen
- ***peltideae** (Vainio) R. Sant. (Alstrup & Cole 1998)
- ***pseudopeltideae** Cl. Roux & Triebel (Diederich 2003; Zhurbenko & Laursen 2003)
- ***psorae** (Anzi) Hafellner
- ***pumilum** (Lettau) Matzer & Hafellner (Cole & D. Hawksworth 2001)
- ***ramalinae** (Müll. Arg.) Etayo & Diederich (Kocourková et al. 2010)
- ***schaereri** (A. Massal.) Trevisan (Reinstated for N.Am. by Henssen 1995)
- ***solorinarium** (Vainio) D. Hawksw. (Zhurbenko 2009a)
- ***squamariae** (B. de Lesd.) Cl. Roux & Triebel
- ***stygnospilum** (Minks) R. Sant. (McCune et al. 2014b)
- ***tabacinae** (Arnold) Triebel
- ***xanthoparmeliarum** Hafellner (Kocourková & Knudsen 2008)
- ***atryneae** (Arnold) Hafellner = *Sphaerellothecium atryneae*, but North American specimens are *Stigmidium squamariae*
- ***schaereri** (A. Massal.) Trevisan = misidentification for North America

STIRTONIA A. L. Sm.

- [Arthonia alba]** Müll. Arg.]
- byssoidea** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- coei** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- dubia** A. L. Smith (Lücking et al. 2011b)
- latispora** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- macrocarpa** Makhija & Patw. (Lücking et al. 2011b)

STRANGOSPORA Körber

- deplanata** (Almq.) Clauz. & Cl. Roux (Knudsen 2007c)
- microhaema** (Norman) R. A. Anderson Syn.: *Biatorella microhaema*
- moriformis** (Ach.) Stein Syn.: *Biatorella moriformis*

pinicola (A. Massal.) Körber
ochrophora (Nyl.) R. A. Anderson = *Piccolia ochrophora*

STRIGULA Fr.

americana R. C. Harris Syn.: *Arthopyrenia tenuis*
bermudana (Nyl.) R. C. Harris (Harris 1995a)
complanata (Fée) Mont.
connivens R. C. Harris (Harris 1995a)
griseonitens R. C. Harris (Harris 1995a)
hypothallina R. C. Harris (Harris 1995a)
jamesii (Swinscow) R. C. Harris Syn.: *Arthopyrenia affinis* auct.
laceribracae R. C. Harris (Harris 1995a)
nitidula Mont.
orbicularis Fr. (Lücking et al. 2011b)
phaea (Ach.) R. C. Harris
schizospora R. Sant. (Lücking et al. 2011b)
smaragdula Fr. : Fr. (Harris 1995a)
stigmatella (Ach.) R. C. Harris Syn.: *Arthopyrenia faginea*, *Porina cinerea*, *P. faginea*
subelegans Vainio (Harris 1995a)
submuriformis (R. C. Harris) R. C. Harris Syn.: *Arthopyrenia submuriformis*
viridiseda (Nyl.) R. C. Harris Syn.: *Porina viridiseda*
wilsonii (Riddle) R. C. Harris
affinis (A. Massal.) R. C. Harris = *S. jamesii* for North American records
elegans (Fée) Müll. Arg. = *S. smaragdula* (Harris 1995a)
sychnogonioides (Nitschke) R. C. Harris = *Geisleria sychnogonioides*

STROMATELLA Henssen

bermudana (Riddle) Henssen (Schultz 2002e)

SULCARIA Bystrek

badia Brodo & D. Hawksw.
isidiifera Brodo
spiralifera (Brodo & D. Hawksw.) Myllys, Velmala & Goward (Myllys et al. 2014) Syn.: *Bryoria pseudocapillaris*, *B. spiralifera*

SULCOPYRENULA H. Harada

canellae-albae (Fée) H. Harada Syn.: *Anthracotheceium carellae-albae* (Harada 1999)
staurospora (Tuck.) H. Harada (Harada 1999)
subglobosa (Riddle) Aptroot (Aptroot 2012)

SYNALISSA Fr.

matogrossensis (Malme) Henssen (Schultz 2002f)
ramulosa (Hoffm.) Fr. Syn.: *Omphalaria symphorea* (McCune et al. 2014b)
melambola Tuck. = *Metamelanea melambola*
symphorea (Ach.) Nyl. = *S. ramulosa* (McCune et al. 2014b)
subnigra (B. de Lesd.) Henssen = *Peccania subnigra*
texana Tuck. = *Peccania texana*

SYNCESIA Taylor (Tehler 1996)

byssina (Vainio) Tehler
depressa (Fée) Tehler
graphica (Fr.) Tehler Syn.: *Chiodecton perplexum*
psaroleuca (Nyl.) Tehler

SYNECHOBLASTUS Trevisan = **COLLEMA**

aggregatus ("Ach.") Th. Fr. = *Gabura fasciculare*

coccophorus (Tuck.) Fink (Fink 1935) = *Enchylium coccophorum*
 cyrtaspis (Tuck.) Fink (Fink 1935) = *Enchylium conglomeratum* (var. *crassiusculum*, Degelius 1974)
 fascicularis (L.) A. L. Smith (Fink 1935) = *Gabura fasciculare*
 laciniatus (Nyl.) Fink (Fink 1935) = *Collema texanum* (Degelius 1974)
 leptaleus (Tuck.) Fink (Fink 1935) = *Collema leptaleum*
 leucocarpus (Hooker f. & Taylor) Müll. Arg. (Fink 1935) = *Collema leucocarpum* Hooker f. & Taylor,
 misidentification for North America (Degelius 1974)
 microptychius (Tuck.) Fink (Fink 1935) = *Collema leptaleum* (Degelius 1974)
 nigrescens (Hudson) Trevisan (Fink 1935) = *Collema nigrescens*
 ohioensis Fink (Fink 1935) = *Enchylium conglomeratum* (Degelius 1974)
 rysssoleus (Tuck.) Fink (Fink 1935) = *Collema rysssoleum*
 polycarpus (Hoffm.) Dalla Torre & Sarnth. = *Enchylium polycarpon*
 pycnocarpus Nyl. = *Enchylium conglomeratum* (var. *crassiusculum*, Degelius 1974)
 rupestris (Sw.) Trevisan = *Collema flaccidum*
 texanus (Tuck.) Müll. Arg. = *Collema texanum*
 wyomingensis Fink = *Enchylium polycarpon*

SYZYGOSPORA G. W. Martin (Diederich 1996)

- ***bachmannii** Diederich & M. S. Christ. (Diederich 1996)
- ***physciacearum** Diederich (Diederich 1996)

SZCZAWINSKIA A. Funk

- leucopoda** Holien & Tønsberg (Holien & Tønsberg 2002)
- tsugae** A. Funk Syn.: *Micarea clavopycnidia* (Aptroot et al. 1997)

TAENIOLELLA S. Hughes

- ***beschiana** Diederich (Zhurbenko & Alstrup 2004)
- ***caespitosa** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- ***christiansenii** Alstrup & D. Hawksw. (Zhurbenko & Daniëls 2003)
- ***delicata** M. S. Christ. & D. Hawksw. (Diederich 2003)
- ***laevistipitata** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- ***phaeophysciae** D. Hawksw. (Diederich 2003)
- ***rolfii** Diederich & Zhurb. (Diederich & Zhurbenko 2001)
- ***serusiauxii** Diederich (Diederich 2003)

TALPAPELLIS Alstrup & M. S. Cole

- ***peltigerae** Alstrup & M. S. Cole (Alstrup & Cole 1998)

TAPELLARIA Müll. Arg.

- albomarginata** Lücking (Lücking et al. 2011b)
- epiphylla** (Müll. Arg.) R. Sant. Syn.: *Lopadium phyllocharis*
- floridensis** Common & Lücking (Lücking et al. 2011b)
- granulosa** Lücking & Rivas Plata (Lücking et al. 2011b)
- malmei** R. Sant. (Lücking et al. 2011b)
- nana** (Fée) R. Sant.
- bilimbioides** R. Sant. Report based on *T. albomarginata* (Lücking et al. 2011b)

TELOSCHISTES Norman

- chrysophthalmus** (L.) Th. Fr.
- exilis** (Michaux) Vainio
- flavicans** (Sw.) Norman
- arcticus** Zahlbr. = *Seiophora aurantiaca*
- californicus** Sipman = *Seiophora californica*
- candelarius** (L.) Fink = *Polycauliona candelaria*
- concolor** (Dickson) Tuck. = *Candelaria concolor*
- contortuplicatus** (Ach.) Clauzade & Rondon = *Seiophora contortuplicata*

euplocus (Tuck.) Zahlbr. = Speerschneidera euploca
lychneus (Ach.) Tuck. = Polycauliona candelaria
parietinus (L.) Norman = Xanthoria parietina
polycarpus (Hoffm.) Tuck. = Polycauliona polycarpa
ramulosus Tuck. = Xanthoria ramulosa
villosus auct. non (Ach.) Norman = T. californicus for North American records

TEPHROMELA M. Choisy

atra (Hudson) Hafellner Syn.: Lecanora atra
***cerasina** (Müll. Arg.) Rambold & Triebel (Nash et al. 2004b)
nashii Kalb (Nash et al. 2004b)
aglaea (Sommerf.) Hertel & Rambold = Calvitimela aglaea
“aglaeida” Nyl. = Calvitimela aglaea
armeniaca (DC.) Hertel & Rambold = Calvitimela armeniaca
testaceoatra (Vainio) Hertel & Rambold = Calvitimela testaceoatra

TETRAMELAS Norman

chloroleucus (Körber) A. Nordin Syn.: Buellia chloroleuca (Nordin 2004)
insignis (Nägeli ex Hepp) Kalb Syn.: Buellia insignis (Nordin 2004)
papillatus (Sommerf.) Kalb Syn.: Buellia papillata (Kalb 2004)
***pulverulentus** (Anzi) A. Nordin & Tibell Syns.: Buellia pulverulenta, Diplotomma pulverulentum (Nordin & Tibell 2005)
terricolus (A. Nordin) Kalb (Kalb 2004)
triphragmioides (Anzi) A. Nordin & Tibell Syn.: Buellia triphragmioides (Nordin & Tibell 2005)
geophilus (Flörke ex Sommerf.) Norman North American records reported to be T. terricolus (Nordin 1999, McCune et al. 2014b)

TEUVOA Sohrabi & S. Leavitt (Sohrabi et al. 2013a)

junipericola Sohrabi & S. Leavitt (Sohrabi et al. 2013a)

TEXOSPORIUM Nádv. ex Tibell & Hofsten

sancti-jacobi (Tuck.) Nádv. Syn.: Cyphelium sancti-jacobi

THALLOLOMA Trevisan

anguiniforme (Vainio) Staiger (Lendemer et al. 2009b)
anguinum (Mont.) Trevisan Syn.: Graphina anguina (Staiger 2002, Tripp et al. 2010), Graphis inustula
cinnabarinum (Fée) Staiger (Kocourková et al. 2010)
hypoleptum (Nyl.) Staiger (Lendemer & Knudsen 2008b)

THAMNOGALLA D. Hawksw.

***crombiei** (Mudd) D. Hawksw.

THAMNOLIA Ach. ex Schaerer

subuliformis (Ehrh.) W. L. Culb.
vermicularis (Sw.) Ach. ex Schaerer
subvermicularis Asahina = T. subuliformis

THECARIA Fée

quassiicola Fée Syn.: Phaeographina quassiicola (Staiger 2002)

THELENELLA Nyl.

brasiliensis (Müll. Arg.) Vainio (Harris 1995a)
calicola C. A. Morse (Morse 2016)
cinerascens (Vainio) R. C. Harris (Harris 1995a)
fugiens (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: Aspidothelium fugiens
geminipara (Malme) R. C. Harris (Harris 1995a)

harrisii H. Mayrhofer
hassei (Zahlbr.) H. Mayrhofer Syns.: *Microglaena hassei*, *M. sychnogonoides*
humilis R. C. Harris (Harris 1995a)
inductula (Nyl.) H. Mayrhofer Syns.: *Microglaena inductula*, *Polyblastiopsis inductula*
modesta (Nyl.) Nyl. Syn.: *Microglaena subcorallina*
muscorum (Fr.) Vainio var. **muscorum** Syn.: *Chromatochlamys muscorum* (Lendemer & Harris 2004)
muscorum var. **octospora** (Nyl.) Coppins & Fryday Syn.: *Chromatochlamys muscorum* var. *octospora* (Fryday & Coppins 2004)
nubifera C. A. Morse (Morse 2016)
pertusariella (Nyl.) Vainio (Harris 1995a)
rappii R. C. Harris (Harris 1995a)
sastreana R. C. Harris (Harris 1995a)
sordidula (Th. Fr.) H. Mayrhofer Syn.: *Microglaena sordidula*
sychnogonioides (Zahlbr.) R. C. Harris (Harris 1995a)
weberi H. Mayrhofer
 americana (Knudsen & Lendemer) Aptroot (Aptroot & Schumm 2012) = *Trimmatothelopsis americana* (Knudsen & Lendemer 2016)
 luridella (Nyl.) H. Mayrhofer (Harris 1995a) North American records are *T. nubifera* (Morse 2016)

THELIDIELLA Fink ex J. Hedrick
 blastenicola Fink = a non-lichenized fungus

THELIDIUM A. Massal.
absconditum (Hepp) Rabenh.
aeneovinosum (Anzi) Arnold
areolatum J. W. Thomson
decipiens (Nyl.) Kremp.
fontigenum A. Massal. Syns.: *Thelidium microbolum*, *Verrucaria microbola*
incavatum Nyl. ex Mudd
microsporum Lynge
minimum (A. Massal. ex Körber) Arnold
minutulum Körber
olivaceum (Fr.) Körber
papulare (Fr.) Arnold Syn.: *Verrucaria sprucei*
parvulum Arnold
pyrenophorum (Ach.) Mudd
transsylvanicum Zschacke
velutinum (Bernh.) Körber
zwackhii (Hepp) A. Massal. (Harris & Lendemer 2005)
 acrotellum Arnold = *T. minutulum*
 circumspersellum (Nyl.) Zschacke North American record is *Porina linearis* (Nash 2002)
 mesotropum (Nyl.) A. L. Sm. = *T. minutulum*
 microbolum (Tuck.) Hasse = *T. fontigenum* (Orange 2009)
 viride (Deak.) Zahlbr. (Fink 1935) = *T. pyrenophorum* (Santesson et al. 2004)

THELIGNYA A. Massal.
lignyota (Wahlenb.) P. M. Jørg. & Henssen Syn.: *Porocyphus dispersus*

THELOCARPON Nyl. ex Hue
epibolum Nyl.
 ***epibolum** var. **epithallinum** (Leighton ex Nyl.) G. Salisb.
hassei B. de Lesd.
impressellum Nyl. (Dillman et al. 2012)
intermediellum Nyl.
laureri (Flotow) Nyl.
 ***lichenicola** (Fuckel) Poelt & Hafellner (Hafellner et al. 2002)

sphaerosporum H. Magn. Syn.: Ahlesia sphaerospora
superellum Nyl.
albomarginatum Herre = Acarospora elevata
epilithellum Nyl. = T. laureri
fimicola Fink = T. intermediellum
majusculum Nyl. = T. laureri
prasinellum Nyl. = T. laureri

THELOMMA A. Massal.

californicum (Tuck.) Tibell Syns.: Cyphelium californicum, C. farlowii, C. andersonii
carolinianum (Tuck.) Tibell Syns.: Acolium carolinianum, Cyphelium carolinianum
mammosum (Hepp) A. Massal. Syn.: Cypheliopsis bolanderi
occidentale (Herre) Tibell Syns.: Cyphelium occidentale. North American records of Cyphelium caliciforme probably belong here.
ocellatum (Körber) Tibell
santessonii Tibell

THELOPSIS Nyl.

flaveola Arnold
inordinata Nyl.
isiaca Stizenb.
melathelia Nyl.
rubella Nyl.
subporinella Nyl. = T. isiaca

THELOTREMA Ach.

adjectum Nyl.
californicum Tuck. Syn.: Phaeotrema californicum
circumscriptum C. Knight (fide T. Lumbsch, see appendix)
defectum Hale
dilatatum (Müll. Arg.) Hale
eximium R. C. Harris
floridense R. C. Harris
halei (Tuck. & Mont.) Zahlbr. Syn.: Myriotrema halei
lacteum Kremp.
lathraeum Tuck. Syn.: Ocellularia lathraea
lepadinum (Ach.) Ach.
monospermum R. C. Harris Syns.: Leptotrema lepadodes, L. monosporum auct.
pachysporum Nyl. (Lücking et al. 2011b)
petractoides P. M. Jørg. & Brodo (Purvis et al. 1995)
porinoides Mont. & Bosch Syn.: Ocellularia floridensis
subtile Tuck. Syn.: Ocellularia subtilis
suecicum (H. Magn.) P. James (Esslinger & Egan 1995)
alborosellum (Nyl.) Tuck. = Chapsa alborosella
bahianum Ach. var. obturascens Nyl. = Ocellularia obturascens
carneum Eckfeldt = Mazosia ocellata
clandestinum Fée = Myriotrema clandestinum, but a misidentification for N. America
domingense (Fée) Tuck. = Ocellularia domingensis, but a misidentification for N. America
glauescens Nyl. = Leucodecton glaucescens
granulosum Tuck. = Rhabdodiscus granulosus
heterosporum C. Knight ex F. M. Bailey = Reimnitzia santensis
interpositum (Nyl.) Müll. Arg. = Ocellularia interposita, but a misidentification for North America
leiomostomum Tuck. = Redingeria leiomostoma (Tuck.) A. Frisch, but a misidentification for North America (Frisch & Kalb 2006)
leprocarpum (Nyl.) Tuck. = Chapsa leprocarpa
monosporum auct. = T. monospermum for North American records

platycarpoides Tuck. (Harris 1995a) = Chapsa platycarpoides
platycarpum Tuck. = Chapsa platycarpoides
postpositum Nyl. = Ocellularia postposita
praestans Müll. Arg. = Ocellularia praestans
ravenelii Tuck. = Sanguinotrema wightii
sanfordianum Zahlbr. = Ocellularia sanfordiana
santense Tuck. = Reimnitzia santensis
texanum Willey ex Nyl. = Trinathotrema stictideum
wightii (Taylor) Nyl. = Sanguinotrema wightii

THERMUTIS Fr.

velutina (Ach.) Flotow

THOLURNA Norman

dissimilis (Norman) Norman

THROMBIUM Wallr.

aoristum (Nyl.) Arnold (Breuss 2002f)

discordans (Nyl.) Zahlbr.

epigaeum (Pers.) Wallr.

mongolicum H. Magn. = misidentification for North America (Morse & Ladd 2015)

THYREA A. Massal.

confusa Henssen (Henssen & Jørgensen 1990)

girardii (Durieu & Mont.) Bagl. & Carestia Syn.: Omphalaria girardii

demangeonii (Moug. & Mont.) Fink = Phylliscum demangeonii

nigritella Lettau = Lichinella nigritella

pulvinata auct. North American = T. confusa

pulvinata (Schaerer) A. Massal. = Gonohymenia iodopulchra (Croz.) Henssen, but not in North America

pyrenoides (Nyl.) Fink = Paulia pyrenoides

TICHOTHECIUM Flotow = VERRUCARIA

***pygmaeum** Körber = Muellerella pygmaea

***zahlbrucknerella** Henssen = Endococcus zahlbrucknerellae

TOMASELLIA A. Massal.

americana (Minks ex Willey) R. C. Harris

[**Mycoporellum difforme** (Minks) Fink]

macularis (Minks ex Willey) R. C. Harris (Harris 1995a) Syn.: Cyrtidula macularis

californica (Zahlbr.) R. C. Harris = Mycoporum californicum

eschweileri (Müll. Arg.) R. C. Harris = Mycoporum eschweileri

esenbeckiana (Fée) Müll. Arg. = Melanotheca esenbeckiana, but a misidentification for N. America

lactea (Ach.) R. C. Harris = Mycoporum lactaeum

sparsella (Nyl.) R. C. Harris = Mycoporum sparsellum

TOENSBERGIA Bendiksby & Timdal (Bendiksby & Timdal 2013)

leucococca (R. Sant.) Bendiksby & Timdal Syn.: Pycnora leucococca

TONINIA A. Massal.

alutacea (Anzi) Jatta

arctica Timdal

aromatica (Turner) A. Massal.

athallina (Hepp) Timdal Syn.: Catillaria athallina, Kiliasia athallina

bullata (Meyen & Flotow) Zahlbr.

candida (Weber) Th. Fr.

cinereovirens (Schaerer) A. Massal.

lutosa (Ach.) Timdal Syn.: (?) *Catillaria crystallifera*
massata (Tuck.) Herre
nashii Timdal (Timdal 2002c)
opuntioides (Vill.) Timdal
pennina (Schaerer) Gyelnik
philippea (Mont.) Timdal Syn.: *Kiliasia philippea*, *Catillaria arctica*, *C. kansuensis*, *C. philippea*
physaroides (Opiz) Zahlbr.
ruginosa (Tuck.) Herre subsp. **ruginosa**
ruginosa subsp. **pacifica** Timdal
sculpturata (H. Magn.) Timdal Syn.: *Catillaria sculpturata*
sedifolia (Scop.) Timdal
squalescens (Nyl.) Th. Fr. (Coppins & Fryday 2006b) But misplaced here?
squalida (Ach.) A. Massal.
subdiffracta Timdal
***subdispersa** (Nyl. ex Hasse) K. Knudsen Syn.: *Lecania subdispersa* (Knudsen & Lendemer 2007)
submexicana B. de Lesd.
subnitida (Hellbom) Hafellner & Türk (Hafellner & Türk 2001) Syn.: *Catillaria tristis*, *C. subnitida*, *Kiliasia tristis*
***subtalparum** van den Boom (van den Boom 2004)
superioris Timdal
taurica (Szatala) Oxner (McCune et al. 2014b)
tristis (Th. Fr.) Th. Fr. subsp. **tristis**
tristis subsp. **arizonica** Timdal
tristis subsp. **asiae-centralis** (H. Magn.) Timdal
tristis subsp. **canadensis** Timdal
tristis subsp. **scholanderi** (Lynge) Timdal Syn.: *Lecidea scholanderi*, *Psora scholanderi*
***verrucarioides** (Nyl.) Timdal
weberi Timdal
caulescens Anzi = *T. squalida*
coeruleonigricans auct. = *T. sedifolia*
coeruleonigricans (Lightf.) Th. Fr. = *Pannaria praetermissa*, nom. rej. prop.
conglomerata (Ach.) Boistel = *Psorinia conglomerata*
cumulata (Sommerf.) Th. Fr. Excluded from *Toninia*; a misidentification for North America
kolax Poelt = *T. verrucarioides*
lobulata (Sommerf.) Lynge = *Bilimbia lobulata*
squarrosa (Ach.) Th. Fr. = *T. squalida*
tabacina auct. = *T. tristis*
talparum Timdal = *T. subdispersa*

TOPELIA P. M. Jørg. & Vězda

aperiens P. M. Jørg. & Vězda
californica P. M. Jørg. & Vězda
gyalectodes (Nyl.) B. D. Ryan & H. T. Lumbsch Syn.: *Lecanora gyalectodes* (Ryan & Lumbsch 2007, Knudsen et al. 2008b)

TOPELIOPSIS Kantvilas & Vězda

toensbergii Vězda & Kantvilas (Kantvilas & Vězda 2000) = *Melanotopelia toensbergii*

TORNABEA Østh. (Nimis & Tretiach 1997)

scutellifera (With.) J. R. Laundon (Nimis & Tretiach 1997)

TRAPELIA M. Choisy

coarctata (Turner) M. Choisy Syn.: *Lecidea coarctata*
corticola Coppins & P. James
glebulosa (Sm.) J. R. Laundon Syn.: *Lecidea gregaria*, *L. ornata* (Laundon 2005)
obtegens (Th. Fr.) Hertel Syn.: *Lecidea obtegens*

placodioides Coppins & P. James
stipitata Brodo & Lendemer (Brodo & Lendemer 2015)
 brujeriana (D. Dietr.) M. Choisy = *Ainoa mooreana*, but a misidentification for North America
 involuta (Taylor) Hertel = *T. glebulosa*
 mooreana (Carroll) P. James = *Ainoa mooreana*, but a misidentification for North America (Brodo & Lendemer 2015)
 torellii (Anzi) Hertel = *Ainoa mooreana*, but a misidentification for North America

TRAPELIOPSIS Hertel & Gotth. Schneider

aeneofusca (Flotow) Coppins & P. James (Aptroot 1996)
bisorediata McCune & Camacho (McCune et al. 2002)
flexuosa (Fr.) Coppins & P. James Syns.: *Lecidea aeruginosa*, *L. flexuosa*
gelatinosa (Flörke) Coppins & P. James Syns.: *Lecidea gelatinosa*, *Micarea gelatinosa*
glaucopholis (Nyl. ex Hasse) Printzen & McCune Syn.: *Lecidea glaucopholis*, *L. admiscens*, *L. granulosa* var. *phyllizans* (Printzen & McCune 2004)
granulosa (Hoffm.) Lumbsch Syns.: *Lecidea granulosa*, *L. quadricolor*
pseudogranulosa Coppins & P. James
steppica McCune & Camacho (McCune et al. 2002)
viridescens (Schrader) Coppins & P. James Syns.: *Biatora viridescens*, *Lecidea viridescens*, *Micarea viridescens*
 californica McCune & Camacho (McCune et al. 2002) = *T. glaucopholis*
 wallrothii (Flörke) Hertel & Gotth. Schneider North American reports are *T. californica* (McCune et al. 2002)

TREMATOSPHAERIOPSIS Elenkin

***parmeliana** (Jacz.) Elenkin (Hafellner 2001)

TREMELLA Pers.

***caloplacae** (Zahlbr.) Diederich (Diederich 2007a)
 ***candelariellae** Diederich & Etayo (Harris 2006a)
 ***cetrariicola** Diederich & Coppins (Diederich 1996)
 ***christiansenii** Diederich (Freebury 2014)
 ***cladoniae** Diederich & M. S. Christ. (Diederich 1996)
 ***dendrographae** Diederich & Tehler (Diederich 1996)
 ***diploschistina** Millanes, M. Westb., Wedin & Diederich (Millanes et al. 2012)
 ***dirinariae** Diederich, Millanes & Wedin (Ariyawansa et al. 2015)
 ***everniae** Diederich (Diederich 1996)
 ***graphidis** Diederich, Millanes, Wedin & Common (Ariyawansa et al. 2015)
 ***haematommatis** Diederich (Diederich 1996)
 ***harrisii** Diederich (Diederich 1996)
 ***hypogymniae** Diederich & M. S. Christ. (Diederich 1996)
 ***lethariae** Diederich (Diederich 2003)
 ***lichenicola** Diederich (Diederich 1996)
 ***nashii** Diederich (Diederich 2007a)
 ***nephromatis** Diederich (Diederich 1996)
 ***nieblae** Diederich & van den Boom (Diederich 2007a)
 ***papuana** Diederich (Diederich 2003)
 ***parmeliarum** Diederich (Diederich 1996)
 ***pertusariae** Diederich (Diederich 1996)
 ***phaeographinae** Diederich & Aptroot (Diederich 1996)
 ***phaeophysciae** Diederich & M. S. Christ. (Diederich 2003)
 ***pyrenulae** Diederich, Millanes, Wedin & Common (Ariyawansa et al. 2015)
 ***ramalinae** Diederich (Diederich 2003)
 ***tuckerae** Diederich (Diederich 2007a)
 ***leptogii** Diederich (Diederich 2003) According to Diederich (2004b), in N.A. known only from

Mexico.

TREMOLECIA M. Choisy

atrata (Ach.) Hertel Syns.: *Lecidea atrata*, *L. dicksonii* auct.
jurana (Schaerer) Hertel = *Farnoldia jurana*
micropsis (A. Massal.) Hertel = *Farnoldia micropsis*
nivalis (Anzi) Hertel = *Farnoldia micropsis*

TRICHARIA Fée

cretacea Vězda
cuneata L. I. Ferraro & Vězda (Lücking et al. 2007)
duotela W. B. Sanders & Lücking (Sanders & Lücking 2015)
floridensis Lücking & W. R. Buck (Lücking et al. 2007)
santessonii D. Hawksw.
subumbrosa Lücking & W. R. Buck (Lücking et al. 2007)
tuckerae Lücking & W. R. Buck (Lücking et al. 2007)
vainioi R. Sant. (Lücking et al. 2007)
melanothrix Fée = *T. santessonii* and *T. vezdae* for North American records
vezdae W. R. Buck = *Gyalideopsis buckii*

TRICHONECTRIA Kirschst.

***rubefaciens** (Ellis & Everh.) Diederich & Schroers (Sèrusiaux et al. 1999) = *Nectriopsis rubefaciens*

TRICHORAMALINA Rundel & Bowler

crinita (Tuck.) Rundel & Bowler Syn.: *Ramalina crinita*

TRICHOSPHAERIA Fuckel

***lichenum** P. Karsten & Har. (Zhurbenko 2009b)

TRICHOTHELIUM Müll. Arg. (Harris 2005)

americanum Lendemer (Lendemer 2016b)
epiphyllum Müll. Arg.
aeneum (Wallr.) R. C. Harris = *Pseudosagedia aenea*
angustisporum Cáceres & Lücking (Lücking & Cáceres 2001) North American reports are *T. americanum* (Lendemer 2016b)
cestrense (E. Michener) R. C. Harris = *Pseudosagedia cestrensis*
chloroticum (Ach.) R. C. Harris = *Pseudosagedia chlorotica*
crocynioides R. C. Harris = *Pseudosagedia crocynioides*
guentheri (Flotow) R. C. Harris = *Pseudosagedia guentheri*
horridulum (Müll. Arg.) R. Sant. North American reports are *T. americanum* (Lendemer 2016b)
isidiatum R. C. Harris = *Pseudosagedia isidiata*
lineare (Leighton) R. C. Harris = *Porina linearis*
nitidulum (Müll. Arg.) R. C. Harris = *Pseudosagedia nitidula*
rhapidospermum (Müll. Arg.) R. C. Harris = *Pseudosagedia rhapidosperma*
thaxteri (R. Sant.) R. C. Harris = *Pseudosagedia thaxteri*

TRIMMATOSTROMA Corda

***dendrographae** Diederich, Ertz, U. Braun & Heuchert (Kocourková et al. 2012)

TRIMMATOTHELE Norman ex Zahlbr.

umbellulariae Herre = *Anisomeridium biforme* (Lendemer & Knudsen 2007)

TRIMMATOTHELOPSIS Zschacke (Knudsen & Lendemer 2016)

americana (K. Knudsen & Lendemer) K. Knudsen & Lendemer Syns.: *Melanophloea americana*, *Thelenella americana* (Knudsen & Lendemer 2016)
dispersa (H. Magn.) K. Knudsen & Lendemer Syn.: *Acarospora dispersa* (Knudsen & Lendemer 2016)

terricola (H. Magn.) K. Knudsen & Lendemer Syn.: *Acarospora terricola* (Knudsen & Lendemer 2016)

TRINATHOTREMA Lücking, Rivas Plata & Mangold

stictideum (Nyl.) Lücking, R. Miranda & Kalb (Lücking et al. 2011)

TRYPETHELIUM Sprengel

aeneum (Eschw.) Zahlbr.

eluteriae Sprengel

marcidum (Fée) Aptroot (Lücking et al. 2011b)

nitidiusculum (Nyl.) R. C. Harris North American records of *T. catervarium* auct. belong here.

ochroleucum (Eschw.) Nyl.

subeluteriae Makhija & Patwardhan (Harris 1995a)

tropicum (Ach.) Müll. Arg. Syn.: *Pyrenula tropica*

variolosum Ach. (Harris 1995a)

virens Tuck. ex E. Michener

annulare (Fée) Mont. = *T. floridanum* for North American records

carolinianum Tuck. = *Bathelium carolinianum*

catervarium auct. = *T. nitidiusculum* for most North American records

catervarium (Fée) Tuck. = *Astrothelium variolosum*

cruentum Mont. = *Pyrenula cruenta*

exocanthum Tuck. = *T. virens*

favulosum Ach. (Fink 1935) Questionable for North America (Esslinger & Tucker 2009)

floridanum (Zahlbr. ex M. Choisy) R. C. Harris = *T. marcidum*

mastoideum (Ach.) Ach. = misidentification for North America (Harris 1995a)

pallescens Fée = *T. ochroleucum*

porosum (Eschw.) Ach. (Fink 1935) = *T. papillosum* Ach. Questionable for North America (Esslinger & Tucker 2009)

scoria Fée (Mohr 1901) = *T. mastoideum*, but a misidentification for North America

scorites Tuck. = *T. virens*

variatum Nyl. (Fink 1935) = *Laurera variata* (Nyl.) Zahlbr. Questionable for North America (Esslinger & Tucker 2009)

TUCKERMANELLA Essl.

arizonica Essl. (Esslinger 2003)

coralligera (W. A. Weber) Essl. Syn.: *Cetraria coralligera*, *Tuckermannopsis coralligera* (Esslinger 2003)

fendleri (Nyl.) Essl. Syn.: *Cetraria fendleri*, *Tuckermannopsis fendleri* (Esslinger 2003)

weberi (Essl.) Essl. Syn.: *Cetraria weberi* (Esslinger 2003)

pseudoweberi Essl. Erroneously listed here; reported only from Mexico (Esslinger 2003)

TUCKERMANNOPSIS Gyelnik

americana (Sprengel) Hale Syn.: *Cetraria halei*, *C. ciliaris* var. *halei*

chlorophylla (Willd.) Hale Syn.: *Cetraria chlorophylla*, *C. scutata* auct. non (Wulfen) Poetsch

ciliaris (Ach.) Gyelnik Syn.: *Cetraria ciliaris*

orbata (Nyl.) M. J. Lai Syn.: *Cetraria orbata*

platyphylla (Tuck.) Hale Syn.: *Cetraria platyphylla* Placement uncertain (Thell et al. 2009)

sepincola (Ehrh.) Hale Syn.: *Cetraria sepincola*, *C. scutata* (Wulfen) Poetsch non auct. Placement uncertain (Thell et al. 2009)

subalpina (Imshaug) Kärnefelt Syn.: *Cetraria subalpina*, *C. arborialis* Placement uncertain (Thell et al. 2009)

aurescens (Tuck.) Hale = *Ahtiana aurescens*

"californica" = *Kaernefeltia californica*

canadensis (Räsänen) Hale = *Vulpicida canadensis*

coralligera (W. A. Weber) W. A. Weber = *Tuckermanella coralligera*

fendleri (Nyl.) Hale = *Tuckermanella fendleri*

halei (W. L. Culb. & C. F. Culb.) M. J. Lai = *T. americana*

inermis (Nyl.) Kärnefelt = *Masonhalea inermis*
juniperina (L.) Hale = Old North American records are *Vulpicida canadensis* or *V. viridis*
juniperina (L.) Hale = *Vulpicida juniperina*
merrillii (Du Rietz) Hale = *Kaernefeltia merrillii*
oakesiana (Tuck.) Hale = *Usnocetraria oakesiana*
pallidula (Tuck. ex Riddle) Hale = *Ahtiana pallidula*
pinastri (Scop.) Hale = *Vulpicida pinastri*
viridis (Schwein.) Hale = *Vulpicida viridis*
[Cetraria weberi Essl.] = Tuckermanella weberi

TURGIDOSCULUM Kohlm. & E. Kohlm.

complicatum (Nyl.) Kohlm. & E. Kohlm. = *Mastodia tessellata*

TYLOPHORON Nyl. ex Stizenb.

hibernicum (D. Hawksw., Coppins & P. James) Ertz, Diederich, Bungartz & Tibell (Lendemer et al. 2013)

moderatum Nyl.

americanum Lendemer, E. Tripp & R. C. Harris (Lendemer et al. 2013) = *Sporodophoron americanum* (Frisch et al. 2015)

protrudens Nyl. North American reports were misidentifications of *T. hibernicum* (Lendemer et al. 2013)

TYLOTHALLIA P. James & H. Kilius

biformigera (Leighton) P. James & H. Kilius Syns.: *Catillaria biformigera*, *C. bahusiensis*

UMBILICARIA Hoffm.

americana Poelt & T. H. Nash

angulata Tuck. Syn.: *Gyrophora angulata*

aprina Nyl.

arctica (Ach.) Nyl. Syn.: *Gyrophora arctica*

cinereorufescens (Schaerer) Frey

crustulosa (Ach.) Frey Syn.: *Omphalodiscus crustulosus*

cylindrica (L.) Delise ex Duby Syn.: *Gyrophora cylindrica*

decussata (Vill.) Zahlbr. Syns.: *Omphalodiscus decussatus*, *Gyrophora decussata*

deusta (L.) Baumg. Syn.: *Gyrophora deusta*, *G. flocculosa*

havaasii Llano

hirsuta (Sw. ex Westr.) Ach.

hyperborea (Ach.) Hoffm. var. **hyperborea** Syn.: *Gyrophora hyperborea*

hyperborea var. **radicicula** (J. E. Zetterst.) Hasselrot

lambii Imshaug

leiocarpa DC. Syn.: *Agyrophora leiocarpa*

lyngei Schol. Syn.: *Agyrophora lyngei*

mammulata (Ach.) Tuck. Syn.: *Gyrophora dillenii*

muhlenbergii (Ach.) Tuck. Syns.: *Actinogyra muhlenbergii*, *Gyrophora muhlenbergii*

nodulospora McCune, Di Meglio & M. J. Curtis (McCune et al. 2014a)

nylanderiana (Zahlbr.) H. Magn.

phaea Tuck. Syn.: *Gyrophora phaea*

polaris (Schol.) Zahlbr. Syn.: *Omphalodiscus krascheninnikovii* auct.

polyphylla (L.) Baumg. Syn.: *Gyrophora polyphylla*

polyrhiza (L.) Fr. Syns.: *Actinogyra polyrhiza*, *Gyrophora polyrhiza*

proboscidea (L.) Schrader Syn.: *Gyrophora proboscidea*

rigida (Du Rietz) Frey Syns.: *U. coriacea*, *Agyrophora rigida*, *Gyrophora anthracina*

scholanderi (Llano) Krog Syn.: *Agyrophora scholanderi*

semitensis Tuck. (Fink 1935; McCune & Curtis 2012) Syn.: *U. angulata* (Llano 1950)

subglabra (Nyl.) Harm. (Nash et al. 1998)

torrefacta (Lightf.) Schrader Syn.: *Gyrophora erosa*, *G. torrefacta*

vellea (L.) Ach. Syn.: Gyrophora vellea
virginis Schaerer Syns.: Omphalodiscus virginis, Gyrophora rugifera
 caroliniana Tuck. = Lasallia caroliniana
 coriacea Imshaug = U. rigida
 dillenii Tuck. = U. mammulata
 grisea Hoffm. = misidentification for North America (Esslinger & Tucker 2009)
 intermedia Frey = U. hyperborea
 krascheninnikovii (Savicz) Zahlbr. North American reports are U. polaris (Davydov et al. 2011)
 papulosa (Ach.) Nyl. = Lasallia papulosa
 pensylvanica Hoffm. = Lasallia pensylvanica
 pustulata (L.) Hoffm. = Lasallia pustulata
 pustulata var. papulosa (Ach.) Tuck. = Lasallia papulosa

UNGUICULARIOPSIS Rehm

***fasciculata** Etayo (Etayo & Triebel 2010)
 ***lettaui** (Grumann) Coppins (Diederich 2003)
 ***refractiva** (Coppins) Coppins (Zhurbenko 2009a)
 ***thallophila** (P. Karsten) W. Y. Zhuang (Diederich 2003)
 *nephromatis Zhurb. & Zavarzin (Zhurbenko 2007b) = Protoungicularia nephromatis

URCEOLARIA Hooker = ASPICILIA

actinostoma Ach. = Diploschistes actinostomus
 albissima (Ach.) Fink = Diploschistes diacapsis
 scruposa (Schreber) Ach. = Diploschistes scruposus

USNEA Dill. ex Adanson

aculeata Motyka (apparent nomen nudum, identity uncertain)
affinis Motyka (apparent nomen nudum, identity uncertain)
alpina Motyka
amabilis Motyka
amblyoclada (Müll. Arg.) Zahlbr. (Clerc & Herrera-Campos 1997)
angulata Ach.
australis Fr.
baileyi (Stirton) Zahlbr.
brasiliensis (Zahlbr.) Motyka (Pérez-Vargas et al. 2010)
brattiae P. Clerc (Clerc 2007)
californica Herre
capillaris Motyka
catenulata Motyka (Identification uncertain)
cavernosa Tuck.
ceratina Ach.
chaetophora Stirton (Halonen et al. 1998)
cirrosa Motyka
condensata Motyka
cornuta Körber subsp. **cornuta**
cristatula Motyka (Knudsen & Lendemer 2006)
cylindrica P. Clerc (Dillman et al. 2012)
dasaea Stirton (Clerc & Herrera-Campos 1997)
dasopoga (Ach.) Nyl. (Arcadia 2013)
deformis Motyka
diffracta Vainio (Lendemer et al. 2008c)
dimorpha (Müll. Arg.) Motyka
diplotypus Vainio (Halonen et al. 1998)
endochrysea Stirton
entoviolata Motyka (Clerc 2004, Lendemer & Tripp 2008)
erinacea Vainio (Tavares & Sanders 1998; Clerc 2011)

esperantiana Clerc (Halonen et al. 1998)
evansii Motyka
fibrillosa Motyka
flammea Stirton (Clerc & May 2007)
flavocardia Räsänen (Clerc 2004)
florida (L.) Weber ex F. H. Wigg. (questionable for North America, Tavares & Sanders 1998)
fragilescens Hav. ex Lynge
fragilescens var. **mollis** (Vainio) Clerc
freyi Motyka
fulvoreanus (Räsänen) Räsänen
furfurosula (Zahlbr.) Motyka
glabrata (Ach.) Vainio
glabrescens (Nyl. ex Vainio) Vainio
graciosa Motyka (Identification uncertain)
halei P. Clerc (Clerc & Herrera-Campos 1997)
hirta (L.) Weber ex F. H. Wigg.
intermedia (A. Massal.) Jatta (Clerc 2007)
lambii (Imshaug) Wirtz & Lumbsch Syn.: *Neuropogon lambii* (Wirtz et al. 2008; Lumbsch & Wirtz 2011)
lapponica Vainio
leucosticta Vainio
longissima Ach.
macaronesica P. Clerc (Clerc 2011)
merrillii Motyka
mexicana Vainio (Truong et al. 2013)
michauxii I. Tav.
mirabilis Motyka
monstruosa Vainio
mutabilis Stirton
myrmaiacaina P. Clerc (Clerc 2007)
nidulans Motyka (Halonen et al. 1998)
occidentalis Motyka
pacificana P. Halonen (Halonen 2000)
parafloridana K. Mark, Will-Wolf & Randlane (Mark et al. 2016)
parvula Motyka (Clerc 2007)
praetervisa (Asahina) P. Clerc (Clerc 2004)
quasirigida Lendemer & Tavares (Lendemer & Tavares 2003)
ramillosa Motyka
roseola Vainio
rubicunda Stirton
scabrata Nyl.
scholanderi Llano
silesiaca Motyka (Tavares 1997; Gams 2004)
silvatica Motyka
sphacelata R. Br. Syns.: *Neuropogon sphacelatus*, *N. sulphureus*
strigosa (Ach.) Eaton subsp. **major** (Michaux) I. Tav.
strigosa subsp. **rubiginea** (Michaux) I. Tav. Syn.: *U. rubiginea*
strigosa subsp. **strigosa**
subcornuta Stirton (Brodo et al. 2001)
subfloridana Stirton
subfusca Stirton
subgracilis Vainio (Tavares 1997; Clerc 2004; Truong et al. 2013)
subrubicunda P. Clerc (Clerc 2011)
subscabrosa Nyl. ex Motyka
transitoria Motyka (Truong et al. 2013)
trichodea Ach.

tristis Motyka
vainioi Motyka
variegata Stirton
wasmuthii Räsänen
xanthopoga Nyl.
 ammannii P. Clerc & Herrera-Campos In North America, only known in Mexico (Clerc & Herrera-Campos 1997)
 antillarum (Vainio) Zahlbr. = U. baileyi
 arizonica Motyka = U. intermedia (Clerc 2007)
 articulata (L.) Hoffm. = misidentification for North America
 barbata (L.) F. H. Wigg. = misidentification for North America?
 barbata var. xanthopoga Müll. Arg. = U. xanthopoga
 betulina Motyka = (?) U. glabrescens
 cornuta subsp. brasiliensis (Zahlbr.) P. Clerc (Clerc 2007) = U. brasiliensis
 caucasica Vainio = (?) U. dasopoga
 ciliifera Motyka (apparent nomen nudum) = U. cirrosa (fide J. Lendemer)
 comosa auct. = U. subfloridana
 compacta (Räsänen) Motyka = U. glabrescens
 confusa Asahina = U. cornuta
 diplotypus Vainio = saxicolous specimens were misidentification for North America (Clerc & Herrera-Campos 1997)
 distincta Motyka = U. glabrescens
 duriuscula Motyka = U. mexicana (Truong et al. 2013) However, the two names represent different chemotypes
 esthonica Räsänen = U. dasopoga
 filipendula Stirton = U. dasopoga (Arcadia 2013)
 finkii Zahlbr. = U. transitoria (Truong et al. 2013)
 flagellata Motyka = U. dasopoga
 globularis Motyka = U. amblyoclada
 herrei Hale = nom. nud.
 hesperina Motyka = U. subgracilis
 implicita (Stirton) Zahlbr. = U. baileyi
 inflata Delise ex Duby nom. nudum = U. cornuta
 kujalae Räsänen = U. glabrata
 laricina Vainio ex Räsänen = (?) U. lapponica
 madeirensis Motyka = U. silesiaca
 mollis Stirton = U. fragilescens var. mollis
 montana Motyka = misidentification for North America
 nashii P. Clerc & Herrera-Campos In North America, only known in Mexico (Clerc & Herrera-Campos 1997)
 pachyclada Motyka = U. ceratina (Clerc 2007)
 pennsylvanica Motyka = U. rubicunda (Clerc 2007)
 perplectata Motyka = U. baileyi (Clerc 2007)
 perplexans Stirton (Clerc 1987) = an Asian taxon, not present in North America
 plicata (L.) Weber ex F. H. Wigg. = misidentification for North America
 prostrata Vainio ex Räsänen = U. barbata, misidentification for North America?
 retifera Motyka = U. intermedia (Clerc 2007)
 rigida (Ach.) Motyka (Halonen et al. 1998) = U. quasirigida
 rubiginea (Michaux) A. Massal. = U. strigosa subsp. rubiginea
 rugulosa Vainio = U. scabrata
 scabiosa Motyka = U. scabrata (Clerc 2007)
 scabrata subsp. nylanderiana Motyka = chemotype of U. scabrata
 schadenbergiana Göpp. & Stein (Clerc 2007) N.A. reports are U. subgracilis (Truong et al. 2013)
 shimadai Asahina In North America, only known in Mexico (Clerc 2004)
 similis Motyka ex Räsänen = U. subfloridana
 soreidiifera (Arnold) Lynge = U. glabrata

sorediifera sensu Motyka = *U. substerilis* (Clerc 2007)
spinulifera (Vainio) Motyka = *U. dasaea* (Clerc 2007)
stuppea (Räsänen) Motyka = *U. substerilis* (Clerc 2007)
subcavata Motyka = *U. perplectata*
subhirta (Vainio) Motyka = *U. cornuta* subsp. *cornuta* (Clerc 2007)
sublaxa Vainio = *U. dasopoga*
substerilis Motyka = *U. lapponica* (Mark et al. 2016)
variolosa Motyka = *U. hirta* (Clerc 1997)
wirthii Clerc = *U. flavocardia*

USNOCETRARIA M. J. Lai & C. J. Wei

oakesiana (Tuck.) M. J. Lai & C. J. Wei Syns.: *Allocetraria oakesiana*, *Cetraria oakesiana*,
Tuckermannopsis oakesiana (Thell et al. 2009)

VAHLIELLA P. M. Jørg. (Jørgensen 2008)

californica (Tuck.) P. M. Jørg. (Jørgensen 2008) Syns. *Fuscopannaria californica*, *Pannaria microphylla*
var. *californica*
globigera (Fryday & P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria globigera*
hookerioides (P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria hookerioides*
labrata (P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria labrata*
leucophaea (Vahl) P. M. Jørg. (Jørgensen 2008) Syns.: *Fuscopannaria leucophaea*, *Pannaria*
leucophaea, *Parmeliella microphylla*
saubinetii (Mont.) P. M. Jørg. (Jørgensen 2008) Syns.: *Fuscopannaria saubinetii*, *Parmeliella saubinetii*

VAINIONORA Kalb

americana Kalb, Tønsberg & Elix (Kalb 2004b)

VARICELLARIA Nyl.

rhodocarpa (Körber) Th. Fr.
velata (Turner) Schmitt & Lumbsch (Schmitt et al. 2012) Syn.: *Pertusaria velata*
kemensis Räsänen = *V. rhodocarpa*

VARIOLARIA Ach. (Lendemer et al. 2013)

amara Ach. Syn.: *Pertusaria amara*
multipunctoides (Dibben) Lendemer, Hodkinson & R. C. Harris Syn.: *Pertusaria multipunctoides*
ophthalmiza (Nyl.) Darb. Syn.: *Pertusaria ophthalmiza*, *P. lecanina* subsp. *nigra*
pustulata (Brodo & W. L. Culb.) Lendemer, Hodkinson & R. C. Harris Syns.: *Haematomma*
pustulatum, *Loxospora pustulata*
trachythallina (Erichsen) Lendemer, Hodkinson & R. C. Harris Syn.: *Pertusaria trachythallina*, *P.*
laevigata
waghornei (Hulting) Darb. Syn.: *Pertusaria waghornei*

VARIOSPORA Arup, Søchting & Frödén (Arup et al. 2013)

aurantia (Pers.) Arup, Søchting & Frödén Syns.: *Caloplaca aurantia*, *C. callopisma*
velana (A. Massal.) Arup, Søchting & Frödén Syn.: *Caloplaca velana*

VERMILACINIA Spjut & Hale (Spjut 1996) = **NIEBLA** (Bowler & Marsh 2004)

acicularis Spjut (Spjut 1996) = *Niebla ceruchoides*
cephalota (Tuck.) Spjut & Hale (Spjut 1996) = *Niebla cephalota*
cerebra Spjut (Spjut 1996) = *Niebla ceruchis*
ceruchoides (Rundel & Bowler) Spjut (Spjut 1996) = *Niebla ceruchoides*
combeoides (Nyl.) Spjut & Hale (Spjut 1996) = *Niebla combeoides*
corrugata Spjut (Spjut 1996) = *Niebla ceruchis*
howei Spjut (Spjut 1996) = *Niebla ceruchis*
laevigata (Rundel & Bowler) Spjut (Spjut 1996) = *Niebla laevigata*
leopardina Spjut (Spjut 1996) = *Niebla ceruchis*

nylanderi Spjut (Spjut 1996) = Niebla ceruchis
 paleoderma Spjut (Spjut 1996) = Niebla laevigata
 polymorpha (Bowler, Marsh, T. H. Nash & Riefner) Spjut (Spjut 1996) = Niebla polymorpha
 procera (Bowler & Rundel) Spjut (Spjut 1996) = Niebla procera
 pumila Spjut (Spjut 1996) = Niebla ceruchoides
 reptiloderma Spjut (Spjut 1996) = Niebla cedrosensis
 robusta (Howe) Spjut & Hale (Spjut 1996) = Niebla robusta
 tigrina (Follmann) Spjut & Hale (Spjut 1996) = misidentification for North America
 tuberculata (Riefner, Bowler, J. E. Marsh & T. H. Nash) Spjut (Spjut 1996) = Niebla tuberculata
 zebrina Spjut (Spjut 1996) = Niebla ceruchis

VERRUCARIA Schrader

acrotella Ach.
adelminienii Zschacke (Breuss 2007b)
aethiobola Wahlenb.
alutacea Wallr. (Breuss 2007b)
americana (B. de Lesd.) Breuss Syn.: Endopyrenium americanum (Breuss 2007b)
amphibia Clemente
amylacea Hepp
applanata Hepp
arctica Lynge
aspecta Breuss (Breuss 2007b)
asperula Servít (Breuss 2007b)
beltraminiana (A. Massal.) Trevisan (Breuss 2007b)
bernaicensis Malbr. (Breuss 2007b)
 #**bernardinensis** Breuss (Breuss 2007b)
boccana Servít (Knudsen & Kocourková 2012b)
breussii Diederich & van den Boom (McCune et al. 2014b)
bryoctona (Th. Fr.) A. Orange (Breuss 2002b)
caerulea DC.
calkinsiana Servít
carbonusta Breuss (Hutten et al. 2013)
cataleptoides (Nyl.) Nyl.
 #**cetera** Breuss (Breuss 1998)
ceuthocarpa Wahlenb.
confluens A. Massal. (Breuss 2007b, McCune et al. 2014b)
dacryodes Nyl.
degelii R. Sant.
divergens Nyl.
devergescens Nyl.
deversa Vainio
ditmarsica Erichsen
dolomitica (A. Massal.) Kremp. (McCune et al. 2014b)
dolosa Hepp
elaeina Borrer (Breuss 2007b, Knudsen 2007c)
elaeomelaena (A. Massal.) Arnold
endocarpoides Servít (Breuss 2007b)
epimaura Brodo (Brodo & Santesson 1997)
erichsenii Zschacke
falcata Breuss (Breuss 2007b)
fayettensis Servít
finkiana Servít
fischeri Müll. Arg. (McCune et al. 2014b)
floerkeana Dalla Torre & Sarnth (Breuss 2007b)
fraudulosa Nyl. (Breuss 2007b)
funckii (Sprengel) Zahlbr.

furfuracea (B. de Lesd.) Breuss (Breuss 2007b, Knudsen 2007c)
fusca Pers. (Tucker et al. 2006)
fuscoatroides Servít (Knudsen & La Doux 2006)
fusconigrescens Nyl.
glaucovirens Grumann
halizoa Leighton
hochstetteri Fr. (McCune et al. 2014b)
hydrela Ach.
illinoisensis Servít
incrassata Breuss (Breuss 2007b)
inficiens Breuss Syns.: Catapyrenium plumbeum, Dermatocarpon plumbeum, Endopyrenium plumbeum (Breuss 1998)
inornata Servít (Breuss 2007b)
integra (Nyl.) Nyl.
internigrescens (Nyl.) Erichsen
iovensis Servít
kondaensis Vainio (McCune et al. 2014b)
kootenaica Breuss & T. Sprib. (Breuss & Spribille 2001)
latebrosa Körber (Spribille et al. 2010)
lobata J. W. Thomson
macrostoma Dufour ex DC.
maculicarpa Breuss (Breuss 2007b)
margacea (Wahlenb.) Wahlenb.
memnonia (Flotow) Arnold (Tucker et al. 2006, Breuss 2007b)
mimicrans Servít (Breuss 2007b, Knudsen 2007c)
muralis Ach.
murorum (Arnold) Lindau (Breuss 2007b)
nigrescens Pers.
nigrescentoidea Fink
nigrofusca Servít (Breuss 2007b)
novomexicana B. de Lesd.
obductilis (Nyl.) Zschacke (Nash et al. 1998)
obnigrescens Nyl.
obsoleta Lynge
onensis Vainio (Breuss 2007b)
ossiseda Lynge
othmarii K. Knudsen & L. Arcadia (Knudsen & Kocourková 2012a)
phaeothelena Th. Fr.
phloeophila Breuss (Breuss 2002b)
pinguicula A. Massal.
poeltii (Servít) Breuss (McCune et al. 2014b)
praetermissa (Trevisan) Anzi
prominula Nyl.
prosoplectenchymatica Servít (Breuss 2007b)
pseudonigrescens Servít
putnae Servít (McCune et al. 2014b)
quercina Breuss (Breuss 2007b)
riddleana R. C. Harris (Harris 1995a)
runderella Nyl.
rufofuscella Servít (Breuss 2007b, Knudsen 2007c)
rupestris Schrader
sandstedei B. de Lesd.
schindleri Servít (Breuss 2007b)
schofieldii Brodo (Brodo & Santesson 1997)
silicicola Fink
sorbicola Servít

sordida Fink
sphaerospora Anzi (Goward et al. 1996)
sphinctrina Ach.
subdivisa Breuss (Breuss 2007b)
subglaucina B. de Lesd.
submersella Servít
submuralis Nyl.
subvirens Servít (McCune et al. 2014b)
tectorum (A. Massal.) Körber
thujae Lendemer & Breuss (Lendemer & Breuss 2009)
trabicola Arnold ex Servít (Nash et al. 1998, Breuss 2007b)
turgida Servít (Breuss 2007b, Knudsen 2007c)
umbrinula Nyl.
viridigrana Breuss (Breuss 2002b)
viridula (Schrader) Ach.
xyloxa Norman (Breuss 2002b)
aquilella Nyl. = *V. aethiobola*
bacillosa Nyl. = *Sarcopyrenia bacillosa*
baldensis A. Massal. (Halda 2003) = *Bagliettoa baldensis* (Breuss 2007b)
calciseda DC. = *Bagliettoa calciseda*
canella Nyl. = *Placopyrenium canellum*
cestrensis Tuck. ex E. Michener = *Pseudosagedia cestrensis*
circumspersella Nyl. = *Thelidium circumspersellum*, but apparent misidentification for North America (Nash 2002)
[#]*compacta* (A. Massal.) Jatta (Knudsen & La Doux 2005) = *Heteroplacidium compactum*
diffractella Nyl. = *Endocarpon diffractellum*
disjuncta Arnold = *Parabagliettoa disjuncta*
exalbida Nyl. = *Polyblastia exalbida*
fulva Cumm. Identity uncertain, illegitimate homonym of *V. fulva* Hoffm. (Dillman et al. 2012)
fuscella (Turner) Winch = *Placopyrenium fuscillum*
fuscella var. *glaucina* (Ach.) Schaerer = *V. caerulea*
glaucina Ach. = *V. caerulea*
hymnothora Ach. = *Granulopyrenis hymnothora*
iowensis Servít = *V. fayettensis*
intercedens Nyl. = *Polyblastia cupularis*
kernstockii Zschacke = *Hydropunctaria rheitrophila*
laevata Ach. = *V. aethiobola*
lecideoides (A. Massal.) Trevisan = *Placopyrenium lecideoides*
marmorea (Scop.) Arnold = *Bagliettoa marmorea* (Yuzon et al. 2014)
maura Wahlenb. = *Hydropunctaria maura*
melas Herre = *Wahlenbergiella striatula* (Knudsen 2012)
microbola Tuck. = *Thelidium fontigenum*
microspora auct. = *V. halizoa*
microspora Nyl. = *V. striatula*
minor Breuss (Breuss 2007b) = *Verruculopsis minutum* (Krzewicka 2012)
mucosa Wahlenb. = *Wahlenbergiella mucosa*
mutabilis Borrer ex Leighton = nom. illegit.
obtenta Nyl. = *Sporodictyon terrestre* (Dillman et al. 2012)
papillosa Ach. (Breuss 2007b, Knudsen et al. 2008b) = *V. viridula* (Orange 2004)
papillosa Flörke non Ach. = *V. floerkeana* (Breuss 2007b)
pernigrata Nyl. = *Protothelenella sphinctrinoides* (Dillman et al. 2012)
perpusilla Russell (Fink 1935) = *Thelidium perpusillum* (A. W. Russell) Zahlbr. Uncertain for North America
rheitrophila Zschacke = *Hydropunctaria rheitrophila*
rubrocincta Breuss (Breuss 2000) = *Bagliettoa rubrocincta* (Yuzon et al. 2014)
rupicola (B. de Lesd.) Breuss non (L.) Humb. = *V. othmarii* (Knudsen & Kocourková 2012a)

sprucei (Lönnr.) Bab (Fink 1935) = *Thelidium papulare* (Nimis & Martellos 2003)
stanfordii Herre = *Placopyrenium stanfordii*
striatula Wahlenb. = *Wahlenbergiella striatula*
submersa Schaerer = *V. submersella*
subsuperficialis Fink = *V. striatula*
tavaresiae R. Moe (Moe 1997) = *Wahlenbergiella tavaresiae*
terebrata (Mudd) Leighton (Fink 1935) = *Staurothele rupifraga* (Smith 1926)
virens Nyl. = *V. glaucovirens*
zamenhofiana Clauzade & Cl. Roux = *Heteroplacidium zamenhofianum* (Kocourková et al. 2012)

VERRUCULOPSIS Gueidan, Nav.-Ros. & Cl. Roux

minutum (Hepp) Krzewicka Syn.: *Verrucaria minor* (Krzewicka 2012)

VESTERGRENOPSIS Gyelnik

elaeina (Wahlenb.) Gyelnik
isidiata (Degel.) E. Dahl Syn.: *Pannaria isidiata*
sonomensis (Tuck.) T. Sprib. & Muggia (Spribille & Muggia 2012) Syn.: *Koerberia sonomensis*,
Pannaria sonomensis

VEZDAEA Tsch.-Woess & Poelt

acicularis Coppins (Brodo 2001; Lendemer & Yahr 2004)
leprosa (P. James) Vězda (Buck et al. 1999)
retigera Poelt & Döbbeler (Lendemer & Yahr 2004)
rheocarpa Poelt & Döbbeler (Westberg 2004b)
schuyleriana Lendemer (Lendemer 2011c)
stipitata Poelt & Döbbeler

VIGNERONIA Ertz (Ertz et al. 2015b)

cypressi (R. C. Harris) Ertz & Tehler

VIOLELLA T. Sprib. (Spribille et al. 2011a)

fucata (Stirton) T. Sprib. Syn.: *Mycoblastus fucatus*

VOUAUXIELLA Petrak & Sydow

***lichenicola** (Lindsay) Petrak & Sydow (Esslinger & Egan 1995)
***verrucosa** (Vouaux) Petrak & Sydow (Diederich 2003)

VOUAUXIOMYCES Dyko & D. Hawksw.

***truncatus** (B. de Lesd.) Dyko & D. Hawksw. (= anamorph of *Abrothallus microspermus*)

VULPICIDA J.-E. Mattsson & M. J. Lai

canadensis (Räsänen) J.-E. Mattsson & M. J. Lai Syns.: *Cetraria canadensis*, *Tuckermannopsis canadensis*
juniperina (L.) J.-E. Mattsson & M. J. Lai (Saag et al. 2014)
pinastri (Scop.) J.-E. Mattsson & M. J. Lai Syns.: *Cetraria pinastri*, *Tuckermannopsis pinastri*
viridis (Schwein.) J.-E. Mattsson & M. J. Lai Syn.: *Cetraria viridis*, *Tuckermannopsis viridis*
tilesii (Ach.) J.-E. Mattsson & M. J. Lai = *Vulpicida juniperina* (Saag et al. 2014)

WAHLENBERGIELLA Gueidan & Thüs (Gueidan et al. 2009)

mucosa (Wahlenb.) Gueidan & Thüs Syn.: *Verrucaria mucosa*
striatula (Wahlenb.) Gueidan & Thüs Syns.: *Verrucaria melas*, *V. striatula*
tavaresiae (R. L. Moe) Gueidan, Thüs, & Pérez-Ortega Syn.: *Verrucaria tavaresiae* (Gueidan et al. 2011)

WAYNEA Moberg

californica Moberg Erroneously listed here as a synonym of *W. stoechadiana*

stoechadiana (Abbassi Maaf & Cl. Roux) Cl. Roux & Clerc = Not in North America

WEDDELLOMYCES D. Hawksw.

***xanthoparmeliae** Calat. & Nav.-Ros. (Kocourková & Knudsen 2008)

WENTIOMYCES Koord.

***peltigericola** D. Hawksw. (Alstrup & Cole 1998) = *Raciborskiomyces peltigericola*

WETMOREANA Arup, Söchting & Frödén (Arup et al. 2013)

texana (Wetmore & Kärnefelt) Arup, Frödén & Söchting Syn.: *Caloplaca texana*

XANTHOCARPIA A. Massal. & De Not. (Arup et al. 2013)

crenulatella (Nyl.) Frödén, Arup & Söchting Syn.: *Caloplaca crenulatella*

erichanseni (S. Y. Kondr., A. Thell, Kärnefelt & Elix) Frödén, Arup & Söchting. Syn.: *Caloplaca erichanseni*

feracissima (H. Magn.) Frödén, Arup & Söchting Syn.: *Caloplaca feracissima*

lactea (A. Massal.) A. Massal. Syn.: *Caloplaca lactea*

marmorata (Bagl.) Frödén, Arup & Söchting Syn.: *Caloplaca marmorata*

tominii (Savicz) Frödén, Arup & Söchting Syn.: *Caloplaca tominii*

XANTHOMENDOZA S. Y. Kondr. & Kärnefelt

borealis (R. Sant. & Poelt) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria borealis* (Söchting et al. 2002)

concinna (J. W. Thomson & T. H. Nash) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria concinna* (Söchting et al. 2002)

fallax (Hepp ex Arnold) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria fallax* (Söchting et al. 2002)

fulva (Hoffm.) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria fulva* (Söchting et al. 2002)

galericulata L. Lindblom (Lindblom 2006)

hasseana (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria hasseana* (Söchting et al. 2002)

mendozae (Räsänen) S. Y. Kondr. & Kärnefelt Syn.: *Xanthoria mendozae* (Lindblom 2004a)

montana (L. Lindblom) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria montana* (Söchting et al. 2002)

oregana (Gyelnik) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria oregana* (Söchting et al. 2002)

subramulosa (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria subramulosa* (Söchting et al. 2002) According to Lindblom (1997), this is a synonym of *X. fulva*

trachyphylla (Tuck.) Frödén, Arup & Söchting Syn.: *Caloplaca trachyphylla*, *Placodium elegans* var. *trachyphyllum*

ulophyllodes (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria ulophyllodes* (Söchting et al. 2002)

weberi (S. Y. Kondr. & Kärnefelt) L. Lindblom (Lindblom 2006) Syn.: *Oxneria weberi*, *Xanthoria wetmorei*

alfredii (S. Y. Kondr. & Poelt) Söchting, Kärnefelt & S. Y. Kondr. = North American report is *X. montana*

rosemarieae S. Y. Kondr. & Kärnefelt (Lumbsch et al. 2011) = *X. weberi* (Knudsen et al. 2011b)

XANTHOPARMELIA (Vainio) Hale

ahtii (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.: *Neofuscelia ahtii*, *Parmelia ahtii*

ajoensis (T. H. Nash) Egan Syn.: *Parmelia ajoensis*

amableana (Gyelnik) Hale (Nash & Elix 2004)

angustiphylla (Gyelnik) Hale

arida Egan & Derstine

atticoides (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.: *Neofuscelia atticoides*, *Parmelia atticoides*

australasica D. J. Galloway
barbatica (Elix) Egan
brunella (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia brunella, *Parmelia brunella*
californica Hale
camtschadalis (Ach.) Hale
chiricahuensis (R. A. Anderson & W. A. Weber) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch
(Blanco et al. 2004b) Syns.: *Neofuscelia chiricahuensis*, *Parmelia chiricahuensis*
chlorochroa (Tuck.) Hale Syn.: *Parmelia chlorochroa*
coloradoënsis (Gyelnik) Hale
commonii Elix & T. H. Nash (Elix & Nash 1999)
consociata (Elix) Elix & Johnston (Nash et al. 1998)
conspersa (Ehrh. ex Ach.) Hale Syns.: *Parmelia conspersa*, *P. isidiata*
cumberlandia (Gyelnik) Hale Syn.: *Parmelia cumberlandia*
dierythra (Hale) Hale Syn.: *Parmelia dierythra*
digitiformis (Elix & P. M. Armstr.) Filson (Nash & Elix 2004)
dissensa (T. H. Nash) Hale Syn.: *Parmelia dissensa*
eganii Elix & T. H. Nash (Elix & Nash 1999)
huachucensis (T. H. Nash) Egan Syn.: *Parmelia huachucensis*
hypofusca (Gyelnik) Hodgkinson & Lendemer (Hodgkinson & Lendemer 2011)
hypomelaena (Hale) Hale Syn.: *Parmelia hypomelaena*
idahoensis Hale
incerta (Kurok. & Filson) Elix & J. Johnst. (Nash & Elix 2004)
infrapallida (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004) Syns.:
Neofuscelia infrapallida, *Parmelia infrapallida*
isidiascens Hale
isidiigera (Müll. Arg.) Elix & J. Johnst. (Nash & Elix 2004)
isidiosa (Müll. Arg.) Elix & Johnston (Nash et al. 1998)
joranadia (T. H. Nash) Hale Syn.: *Parmelia joranadia*
knudsenii Elix, A. Thell & Söchting (Thell et al. 2009)
lavicola (Gyelnik) Hale Syn.: *Parmelia kurokawae*
lineola (E. C. Berry) Hale Syn.: *Parmelia lineola*
lipochlorochroa Hale & Elix
lobulatella T. H. Nash & Elix (Nash & Elix 2004)
loxodes (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia loxodes, *Parmelia isidiotyla*, *P. loxodes*
maricopensis T. H. Nash & Elix
mexicana (Gyelnik) Hale Syn.: *Parmelia mexicana*
moctezumensis T. H. Nash
montanensis Hale
monticola (J. P. Dey) Hale Syn.: *Parmelia monticola*
mougeotii (Schaerer) Hale Syn.: *Parmelia mougeotii*
neochlorochroa Hale
neocongensis (Hale) Hale (Nash et al. 1998)
neoconspersa (Gyelnik) Hale Syn.: *Parmelia neoconspersa*
neorimalis (Elix & P. M. Armstr.) Elix & T. H. Nash (Nash & Elix 2004)
neotaractica Hale
neowyomingica Hale
nigrolavicola T. H. Nash & Elix (Nash & Elix 2004)
nigropsoromifera (T. H. Nash) Egan Syn.: *Parmelia nigropsoromifera*
nigroweberi T. H. Nash & Elix (Nash & Elix 2004)
norchlorochroa Hale
norhypopsila Hale
novomexicana (Gyelnik) Hale Syns.: *Parmelia novomexicana*, *P. tuberculata*, *P. arseneana*
occidentalis (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia occidentalis, *Parmelia occidentalis*

oleosa (Elix & P. M. Armstrong) Elix & T. H. Nash
piedmontensis (Hale) Hale Syn.: *Parmelia piedmontensis*
planilobata (Gyelnik) Hale
plittii (Gyelnik) Hale Syn.: *Parmelia plittii*
pseudocongensis Hale (Nash & Elix 2004)
psoromifera (Kurok.) Hale Syn.: *Parmelia psoromifera*
pustulosa (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia pustulosa, *Parmelia pustulosa*
schmidtii Hale
standaertii (Gyelnik) Hale (Nash & Elix 2004)
stenophylla (Ach.) Ahti & D. Hawksw. Syn.: *Parmelia stenophylla* (Ahti & Hawksworth 2005)
stenophylloides (Müll. Arg.) Hale
subcumberlandia Elix & T. H. Nash (Nash & Elix 2004)
subdecipiens (Vainio) Hale Syn.: *Parmelia subdecipiens*
subhosseana (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia subhosseana, *Parmelia subhosseana*
subplittii Hale (Nash & Elix 2004)
subramigera (Gyelnik) Hale Syn.: *Parmelia subramigera*
substenophylloides Hale
subtasmanica Elix & T. H. Nash (Nash & Elix 2004)
tegeta Elix & Johnston (Nash et al. 1998)
tinctina (Maheu & Gillet) Hale (Nash & Elix 2004)
tuberculata (Gyelnik) T. H. Nash & Elix (Nash & Elix 2004)
tuckeriana Elix & T. H. Nash (Nash & Elix 2004)
tucsonensis (T. H. Nash) Egan Syn.: *Parmelia tucsonensis*
vagans (Nyl.) Hale
verruculifera (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:
Neofuscelia verruculifera, *Parmelia verruculifera*
viriduloumbrina (Gyelnik) Lendemer (Lendemer 2005b)
weberi (Hale) Hale Syn.: *Parmelia weberi*
wyomingica (Gyelnik) Hale Syn.: *Parmelia wyomingica*
arseneana (Gyelnik) Hale = *X. novomexicana*
centrifuga (L.) Hale = *Arctoparmelia centrifuga*
congensis (Stein) Hale Syn.: *Parmelia congensis*, but only known as far north as Mexico
hypopsila (Müll. Arg.) Hale = misidentification for North America; most specimens are *X. angustiphylla*
incurva (Pers.) Hale = *Arctoparmelia incurva*
ioanis-simae (Gyelnik) Hale = *X. taractica*, but see note below
kurokawae (Hale) Hale = *X. lavicola*
lecanorica (Hale) Hale Syn.: *Parmelia lecanorica* Not in North America
separata (Th. Fr.) Hale = *Arctoparmelia separata*
somloënsis (Gyelnik) Hale = *Xanthoparmelia stenophylla*
subcentrifuga (Oxner) Hale = *Arctoparmelia subcentrifuga*
subconspersa (Nyl.) Hale = *Flavoparmelia rutidota*
taractica (Kremp.) Hale = known from Mexico, but misidentification for our area; western N. A. specimens are mostly *X. coloradoensis* and eastern N. A. specimens are mostly *X. viriduloumbrina*
tasmanica (Hooker f. & Taylor) Hale North American reports are *X. hypofusca*
tinctina (Maheu & A. Gillet) Hale Syn.: *Parmelia tinctina* Not in North America

XANTHOPSORA Gotth. Schneider & W. A. Weber = **XANTHOPSORELLA**

texana (W. A. Weber) Gotth. Schneider & W. A. Weber = *Xanthopsorella texana*

XANTHOPSORELLA Kalb & Hafellner

texana (W. A. Weber) Kalb & Hafellner Syns.: *Xanthopsora texana*, *Psora texana*, *Lecidea texana*

XANTHORIA (Fr.) Th. Fr.

- parietina** (L.) Th. Fr. Syn.: *Teloschistes parietinus*
- tibellii** S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a)
- alaskana** J. W. Thomson = *Polycauliona polycarpa* (Lindblom 1997)
- alfredii** S. Y. Kondr. & Poelt (Kondratyuk & Poelt 1997) = North American report is *Xanthomendoza*
- montana** (Lindblom 1997)
- ascendens** S. Y. Kondr. (Lindblom 2004b) = *Polycauliona ascendens*
- borealis** R. Sant. & Poelt = *Xanthomendoza borealis*
- candelaria** (L.) Th. Fr. = *Polycauliona candelaria*
- candelaria** var. **finmarkica** (Ach.) Hillmann = *Polycauliona candelaria*
- concinna** J. W. Thomson & T. H. Nash = *Xanthomendoza concinna*
- elegans** (Link) Th. Fr. = *Rusavskia elegans*
- elegans** var. **splendens** (Darb.) M. S. Christ. ex Poelt = *Rusavskia elegans*
- fallax** (Hepp ex Arnold) Arnold = *Xanthomendoza fallax*
- fulva** (Hoffm.) Poelt & Petutschnig (Esslinger & Egan 1995) = *Xanthomendoza fulva*
- hasseana** Räsänen = *Xanthomendoza hasseana*
- lobulata** (Flörke) B. de Lesd. = *Calogaya lobulata*
- mendozae** Räsänen = *Xanthomendoza mendozae*
- montana** L. Lindblom (Lindblom 1997) = *Xanthomendoza montana*
- oregana** Gyelnik (Lindblom 1997) = *Xanthomendoza oregana*
- papillifera** (Vainio) Poelt = *Rusavskia papillifera*
- pollinarioides** L. Lindblom & D. M. Wright (Lindblom 2004b) = *Polycauliona pollinarioides*
- polycarpa** (Hoffm.) Th. Fr. ex Rieber = *Polycauliona polycarpa*
- ramulosa** (Tuck.) Herre = *Polycauliona polycarpa* (Lindblom 1997)
- sorediata** (Vainio) Poelt = *Rusavskia sorediata*
- subramulosa** Räsänen = *Xanthomendoza subramulosa*
- tenax** L. Lindblom (1997) = *Polycauliona tenax*
- tenuiloba** L. Lindblom (Lindblom 2004b) = *Polycauliona tenuiloba*
- ulophyllodes** Räsänen = *Xanthomendoza ulophyllodes*
- weberi** S. Y. Kondr. & Kärnefelt = *Xanthomendoza weberi*
- wetmorei** S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a) = *Xanthomendoza weberi* (Knudsen et al. 2011b)

XENONECTRIELLA Weese

- ***lutescens** (Arnold) Weese (Zhurbenko 2009a)

XEROTREMA Sherwood & Coppins

- ⁺**megalospora** Sherwood & Coppins

XYLEBORUS R. C. Harris & Ladd (Harris & Ladd 2007)

- nigricans** R. C. Harris & Lendemer (Lendemer & Harris 2015b)

- sporodochifer** R. C. Harris & Ladd (Harris & Ladd 2007)

XYLOGRAPHA (Fr.) Fr.

- bjoerkii** T. Sprib. (Spribille et al. 2014a)
- carneopallida** (Räsänen) T. Sprib. (Spribille et al. 2014a)
- crassithallia** B. D. Ryan & T. H. Nash (Ryan 2004b) Possibly a synonym of *X. difformis* (Spribille et al. 2014a)
- difformis** (Vainio) Vainio (Spribille et al. 2014a)
- disseminata** Willey
- erratica** T. Sprib. (Spribille et al. 2014a)
- hians** Tuck.
- opegraphella** Nyl.
- pallens** (Nyl.) Harm. (Spribille et al. 2014a)
- parallela** (Ach.: Fr.) Fr.
- rubescens** Räsänen (Spribille et al. 2014a)

schofieldii T. Sprib. (Spribille et al. 2014a)
septentrionalis T. Sprib. (Spribille et al. 2014a)
soralifera Holien & Tønsberg (Holien & Tønsberg 2008)
stenospora T. Sprib. & Resl (Spribille et al. 2014a)
trunciseda (Th. Fr.) Minks ex Redinger
vermicularis T. Sprib. (Spribille et al. 2014a)
vitiligo (Ach.) J. R. Laundon
 abietina (Pers.) Zahlbr. = *X. parallela*
 micrographa G. Merr. = *X. hians*
 pruinodisca B. D. Ryan & T. H. Nash (Ryan 2004b) = *X. difformis* (Spribille et al. 2014a)
 spilomatica (Anzi) Th. Fr. = *X. vitiligo*

XYLOPSORA Bendiksby & Timdal (Bendiksby & Timdal 2013)

friesii (Ach.) Bendiksby & Timdal Syn.: *Hypocenomyce friesii*, *Lecidea friesii*, *Psora friesii*

XYLOSCHISTES Vainio ex Zahlbr

platytropa (Nyl.) Vainio (Spribille & Björk 2008)

ZAHLBRUCKNERELLA Herre

calcarea (Herre) Herre

californica Henssen

fabispora Henssen

ZAMENHOFIA Clauzade & Cl. Roux = **PORINA**

hibernica (P. James & Swinscow) Clauzade & Cl. Roux = *Porina hibernica*

ZWACKHIA Körber

viridis (Pers. ex Ach.) Poetsch & Schied. (Ertz & Tehler 2011) Syn.: *Opegrapha viridis*

ZWACKHIOMYCES Grube & Hafellner

***arenicola** R. C. Harris (Harris 1995a)

***berengerianus** (Arnold) Grube & Triebel

***cladoniae** (C. W. Dodge) Diederich (Alstrup & Cole 1998)

***coepulonius** (Norman) Grube & R. Sant. (Goward et al. 1996)

***dispersus** (J. Lahm ex Körber) Triebel & Grube Syn.: *Pharcidia dispersa*

***euplocinus** Hafellner, Grube & Egan

***macrosporus** Alstrup & Olech (Zhurbenko 2013)

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APPENDIX – SPECIMEN CITATIONS

Bryophagus gloeocapsa Nitschke ex Arnold – U.S.A. Michigan. Cheboygan Co.: just N of Cheboygan Levering Rd. W of its intersection with Interstate 75; 45deg. 38' N, 84deg. 39' W; on terricolous bryophytes, J. Hafellner 7998 (GZU).

Pyrenopsis portoricensis Zahlbr. – U.S.A. North Carolina. Anson Co.: *Perlmutter 1827* (NCU); Wake Co.: *Perlmutter 1899* (NCU); Georgia. Columbia Co.: *Perlmutter 1644* (NCU). New to North America (communicated G. Perlmutter; specimens identified by Matthias Schultz).

Thelotrema circumscriptum C. Knight – U.S.A. Oregon. Lincoln Co.: Ona Beach State Park, 8 mi. S of Newport, Sitka spruce & pines at shore, 20.8.1975, C. M. Wetmore 24624 (MIN). New to Northern Hemisphere (communicated T. Lumbsch).